RecFish 2000

Managing Marine Recreational Fisheries in the 21st Century

Meeting the Needs of Managers,
Anglers, and Industry

June 25–28, 2000

San Diego, California

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RecFish 2000
NATIONAL SYMPOSIUM

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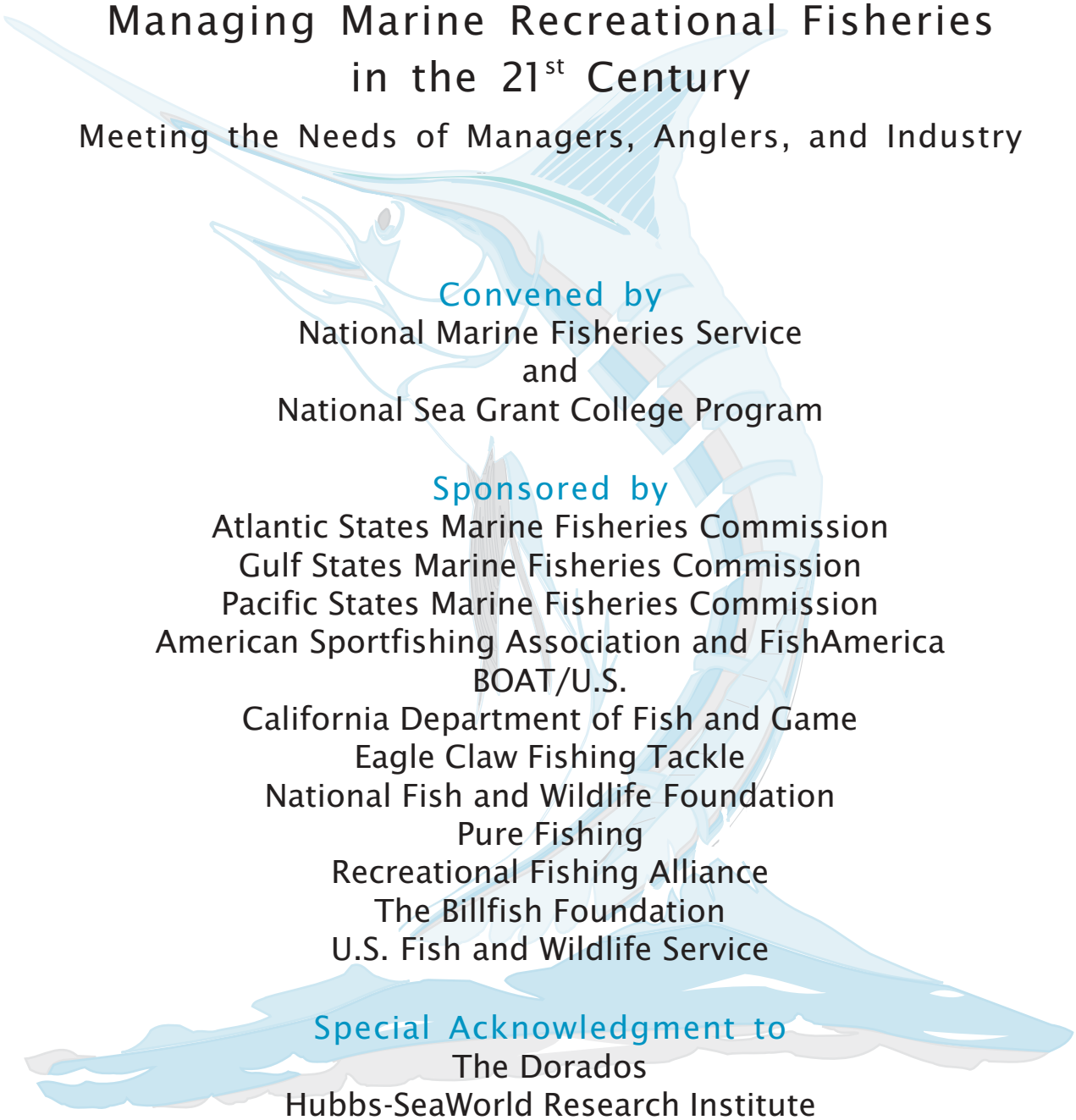

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RecFish2000, "Managing Marine Recreational Fisheries in the 21st Century—Meeting the Needs of Managers, Anglers, and Industry," was a national symposium which focused on contemporary and future issues related to the management, conservation and quality of marine recreational fisheries. Co-convened by the National Marine Fisheries Service and the National Sea Grant Program, the event was held in San Diego, California, June 25–28, 2000 and was attended by more than 200 participants representing all segments of the marine recreational fishing community. Additionally, six foreign nations were also represented.

It is our belief that the sharing of experience, ideas, and visions of the participants has provided a composite volume of knowledge that will help guide those involved in marine recreational fishing as we enter the new millennium.

While no consensus was sought on the myriad of issues and challenges which were discussed, the interaction among the diverse interests proved clearly that all share common goals in maintaining a healthy, sustainable fishery resource with fair and equitable management.

Through this interaction, both intellectual and personal, it is our hope that new partnerships have been forged that will benefit all of us who are committed to achieving our common goals.

Importantly, we thank the sponsors and all of the individuals who helped make *RecFish 2000* a successful and rewarding opportunity for the marine recreational fishing community to gather and discover improved paths to meet the future needs of "Managers, Anglers, and Industry."

Sincerely,

William Hogarth
Acting Assistant Administrator
for Fisheries
NOAA

Sincerely,

Ronald Baird
Director
National Sea Grant College Program
NOAA

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Opening Session
Monday, June 26, 2000

Mr. Bill Price,
National Coordinator for Recreational Fisheries, National Marine Fisheries Service

Thank you very much for being here. We hope that this is going to be a very productive symposium. I'd like to introduce the Honorable Robert Hight, Director of California's Department of Fish and Game, to start the program.

Mr. Robert Hight,
Director, California Department of Fish and Game

Good morning, and thank you. On behalf of the California Department of Fish and Game, I'd like to welcome you here to this symposium. I'm always impressed when I come to different conferences and meetings about the energy that the participants have relating to their various subject matters, and here there is a lot of energy relating to fishing.

My purpose here is really very simple, to welcome you. I want to leave you with two ideas to contemplate as you listen to all of the various speeches and conversations during this symposium. What is the future of recreational saltwater fishing in California and in general? And, California has, we believe, a new way to manage the saltwater fishery.

First, what is the future of it? In the last 100 years, recreational fishing has been a major component of the California economy. California ranks third in the nation in the number of marine anglers. Approximately one million anglers took four million trips during the last year. San Diego has 50 party boats and there are 300 statewide. This produces a revenue to California, to the economy, of about $1 billion a year. Now, in the last 10 years, fishing license sales have declined. And if you look at the next 20 years, California will gain one million people a year. Will that decline continue or will it do something else? My gut tells me that it is going to pick back up again, and I think that it is going to create bigger challenges for us in the way that we manage the ocean and the fisheries.

And with that, I'll segue into my next piece which is, two years ago California enacted a law called the Marine Life Management Act (MLMA). I'm going to give you just an overview of it, and Patty Wolf, later in the day, will give us a lot more detail about it. I think it's the cutting edge way to manage fisheries. Prior to the enactment of the MLMA, the California legislature managed the fisheries species-by-species, bill by bill. If there was a problem with herring, abalone, or squid, there would be a specific bill passed to deal with that specific issue. You didn't look at the overall ecosystem, the ocean as a whole.

With the passage of the MLMA, the legislature got out of the business of micro-managing the fisheries. It delegated to the Department of Fish and

Game the authority and the ability to prepare management plans. Those plans will go to the Fish and Game Commission for approval. The thought was that this process is easier to manage, it has more give and take. The legislative process doesn't have the ability to do any kind of major, in-depth investigation. The Marine Life Management Act process will allow us to develop management plans for all of the fisheries based on marine ecosystems and biodiversity, looking at the whole picture. It allows us to be proactive, rather than wait until a fishery is in decline to take action.

Another feature is constituent involvement. The legislative process doesn't allow for inclusive constituent involvement. We have already had 13 meetings up and down the coast to request input from constituents. The first plan is due in January 2002. The plan is to be based on the "best available science." The legislature knew that we wouldn't have the absolute science that we needed to make judgments based upon the information that we have. Its goal is the long-term health and sustainability of the ecosystem. To extend this communication process, we have set up a website and a newsletter to inform the electorate and the fishing population of our plans. We think this is the way to manage fisheries, and we hope that it proves productive.

One other item that we have on our agenda in California is a thing called the Marine Life Protection Act. California has more than 100 marine reserves, and some of them overlap, some of them allow fishing, some of them prohibit fishing, and they are confusing. We are taking a look at the entire reserve system and trying to simplify it, and that will go hand in hand with the Marine Life Management Act. With that very broad overview, I want to welcome you again and thank you for your participation. I think this is going to be a very productive conference. Thank you.

Mr. Bill Price

Thanks very much, Bob. We are pleased to be here in your lovely state. I'd like to introduce the Honorable Scott Gudes, Deputy Under Secretary for Oceans and Atmosphere, National Oceanic and Atmospheric Administration (NOAA).

Mr. Scott Gudes,
Deputy Under Secretary of Commerce for Oceans and Atmosphere, National Oceanic and Atmospheric Administration (NOAA)

Thanks Bill. I like to call myself Deputy Under Secretary of NOAA, but my formal title is Deputy Under Secretary of Commerce for Oceans and Atmosphere and that is relevant. I'm really excited to be at this recreational fishing symposium in San Diego because I'm a recreational fisherman. I got my start in 1962 on the Huntington Beach pier with my father, fishing for jacksmelt and perch. I grew up about 100 miles north of here, and one of the reasons that I went to San Diego State University was because I would get the opportunity to fish for albacore or yellowtail. I didn't usually catch

one, but I used to go out twice a year. I don't get to fish that much anymore, but I did get to fish for the last three days in the East Cape of Baja California, Mexico. While I was trolling, I reflected about life and fishing. I've come to the conclusion that recreational angling is great training for life and for professional success.

First, all anglers exhibit incredible patience and determination. They sit in one place for hours on end. Second, recreational anglers have imagination and vision and are eternal optimists. You can stare at lures trolling in the wake of a boat for hours; and you're sure, that in just 15 minutes more, there's going to be a strike. Third, you react quickly and you demonstrate hustle. When you are on an albacore boat and you get a strike, and you're getting bait out of the live well, you're always quick. Fourth, you keep up your spirits and exhibit humor, though I'm not going to repeat any of those jokes today. Fifth, you exhibit teamwork and camaraderie. If you've noticed, very few recreational fishermen fish by themselves. They tend to fish with friends. Sixth, whether yelling "over" and "under" out on a charterboat or reeling in some line so a lure doesn't get hit, you're always working as a team. Seventh, you invest in equipment. You get the newest rods, reels, lures and transport them to the most interesting locations. And, eighth and finally, you never lose your sense of enjoyment and wonder at seeing a fish come over the rail. Once it is brought up, you have the great enjoyment of landing a gamefish, taking the hook out and reviving it, and sending it on it's way.

I had two other observations from that trip. First, I visited an area of Mexico where recreational angling is the economy. It is the only reason why there are jobs or development there, and the people there understand that. And second, from what I can tell, conservation is working. Ever since I first fished in Mexico 25 years ago, there never has been an argument with a deckhand or a captain if you caught a billfish. It was released. Very positive.

As Deputy Under Secretary of NOAA, let me note that there are a number of programs that we operate to support you in addition to the management of fisheries. You are our constituents. We have environmental satellites and weather buoys to forecast the weather that you see reported on television. You practice your sport outside, so knowing the weather forecast is a pretty important function. We observe and predict ocean surface temperatures, currents, tides, and phenomena like harmful algal blooms. We deal with coastal development, coastal zone management, polluted runoff and water quality. We promote safe navigation. I suppose that many of you who are recreational anglers have boats, and those charts that you use are NOAA charts. We do research on topics like El Niño and climate and, of course, the Sea Grant Program and Ron Baird are involved in fisheries in a big way. We also operate a number of habitat restoration programs all over the country, from oyster restoration on the Chesapeake

Bay to wetlands restoration in Louisiana, to kelp restoration in Santa Monica Bay here in California. So we are involved in many ways. Recreation anglers, you are our constituents.

The topic for today's symposium is "Recreational Angling: Managing Marine Recreational Fisheries in the 21st Century." As managers, the goal of NOAA and our National Marine Fisheries Service is to strengthen the management and conservation of marine species. I view marine recreational anglers as sharing a common objective of maintaining sustainable fisheries stocks so that future generations of anglers can enjoy the recreational angling experience. Penny Dalton, our Director of the National Marine Fisheries Service, will give you some of the data, but let me say that with my Commerce hat on, I can't miss the fact that recreational angling is important for jobs and economic growth. Ten million marine anglers contribute $9 billion to the annual economy. One thing that I have learned about fisheries management since I've been at NOAA, is that no issue is easy. All of them are complex, and the issues involve multiple levels of state and local governments, multiple levels of society, the executive branch, NOAA, and the National Marine Fisheries Service. It's like a civics lesson because we get to involve the legislative branch in almost every issue, the Senate and the House. And, the federal courts are increasingly involved in almost every issue, as is the private sector and the fishery management councils under the Magnuson-Stevens Act.

It's imperative that managers at all levels of government and industry work together to achieve the common goal of conserving resources and improving recreational angling opportunities. That is why we are co-hosting the symposium this week. We are trying to bring together diverse segments of the marine recreational community to look at the challenges and opportunities that face us all. The symposium will allow us to critique current management regimes, access recreational data, look at demographic data, and other factors that will influence recreational fishing into the 21st century.

We will look at success stories where management partnerships have worked, like the striped bass recovery in the Atlantic, which has been a tremendous success. We should note that there have been many successes in marine recreational species and angling. When I moved to Maryland 22 years ago, there were no fishing licenses but more importantly there were no limits on the size of fish taken and no limit on the numbers of fish taken. People used to fill barrels with bluefish. There are now size limits and licenses. The restoration of white seabass here in California has been a real success story. When I was a kid, we saw very few white seabass being caught; and now with the work of Bill Shedd and others, they are coming back.

In conclusion, let me thank Penny Dalton, Dick Schaefer, Bill Price, Dallas Miner, Peter Allen, Jack Dunnigan and others, especially the private

partners who helped put together the symposium. It's important that we do this, and I look forward to hearing from you about the issues. The input gained from this symposium will be applied to improving our NOAA programs and improving the marine recreational fishing experience in the 21st century. Thank you for inviting me today.

Mr. Bill Price

Thanks very much, Scott. Our next speaker is my boss, and it gives me great pleasure to introduce to you the Director of the National Marine Fisheries Service, Penny Dalton.

Ms. Penny Dalton, Director, National Marine Fisheries Service

Good morning. As Director of NOAA's National Marine Fisheries Service, I am very pleased to be here today as the co-convener with the National Sea Grant Program of this symposium on our nation's marine recreational fisheries. I'd like to begin by thanking the many sponsors and other contributors who have made this symposium a reality. We could not have done it without you. And, it's great to see a wonderful turnout.

RecFish 2000 brings together fishery managers and scientists, anglers and sportfishing associations, tackle manufacturers, and educators. In short, all those interested in the future of marine sportfishing. It's the first symposium of its kind, we believe, here in the United States, and I for one think it's long overdue. The subtitle of the symposium, "Meeting the Needs of Managers, Anglers, and Industry," is at the core of its intent. We hope this gathering will be more than the usual cast of regulators lecturing to the regulated. We really need to look at the interaction between conservation and management requirements and the human dimension of fisheries management. I believe the agenda clearly reflects that need.

I'd like to identify some of the challenges NOAA Fisheries faces in managing marine recreational fisheries. I would ask that you keep them in mind as you participate in this symposium over the next three days.

Our first challenge is addressing the changing face of recreational fishing. Today, recreational fishing is one of the largest outdoor leisure time activities in the United States, second only to swimming. It is a pastime that contributes substantially to the physical and mental health of our society, as well as to our nation's economy. Indeed, it is estimated that there currently are more than 9 million saltwater anglers who spend more than $9 billion annually in pursuit of their recreational enjoyment. The total impact on our national economy in terms of direct and indirect expenses in goods and services is more than $25 billion each year. And, nearly 3,000 jobs rely on anglers' continued passion for catching saltwater fish. The future health and availability of marine fish species for recreational use should be a concern for each and every one of them.

As we move into the 21st century, our society will continue to change. Because Americans like to live near the ocean, more and more people are moving to the coast and increasing the pressure on that environment. Similarly, we expect to see greater demand on fish populations for both food and recreation. That demand will be reshaped as our society becomes more diverse in terms of age, ethnic, and cultural composition. For example, more and more people are seeking leisure activities as the baby boomer generation reaches retirement age. What effect will they have on angling participation and on the health of marine fish populations? On Tuesday, Bob Ditton and other panelists will provide a more detailed picture of the anticipated demographic changes and their implications for saltwater fisheries. There is no doubt that our growing and changing population will substantially affect recreational fisheries and the angling experience. It is also likely to affect, and be affected by, the way that we manage these fisheries. To briefly illustrate the kinds of demographic changes we are already seeing, statistics for recent years suggest that the overall number of saltwater anglers in the United States is static and may even be declining in some areas. However, these same statistics show an increase in overall angling activity based on the total number of fishing trips taken. For example, the number of recreational fishing trips for Atlantic striped bass has jumped nearly fivefold in the last 10 years. This is probably due, in large part, to our success in rebuilding striped bass populations. So, as recreationally important stocks recover, we can expect the number of saltwater anglers to grow, and they will increase fishing pressure on marine resources. Thus, one of the major questions at this conference is how to shape future management to meet the additional needs and issues that expanding angling participation and changing demographics will bring. How can all of us—anglers, industry, and government—work more closely together to improve marine recreational fisheries in an environmentally conscious and economically beneficial way?

A second challenge is restoring and maintaining marine fish populations. As the Atlantic striped bass fishery illustrates, healthy fisheries depend on healthy stocks. In recent years we have focused on improving the information base for management decisions. It is, of course, an enormous task to get good data on recreational fisheries. Just a few months ago we announced plans for improving our Marine Recreational Fisheries Statistics Survey. In addition, groups like the Billfish Foundation are working with us to improve tournament reporting. However, one thing that I have learned over the past year is that federal agencies are more like freighters than powerboats. They move slowly and it takes a long time to change course. We currently are exploring organizational changes to address this frustrating issue. With your continued patience and support, I'm confident that we can get our ship on a course that will substantially improve recreational reporting. In addition, we are exploring new opportunities for cooperative

research with recreational fishermen that will improve our understanding of the fish themselves. One example is the bluefin tuna tagging work done by Stanford University researcher Barbara Block and North Carolina Charterboat Captain, Bob Eakes. The project has provided new insights into the life history of these incredible fish and has major implications for how we manage the Atlantic bluefin tuna fishery.

Among the conservation questions to be examined during the symposium are which marine recreational fishery management processes and institutions need improvement, and which are working well? How can we make the management process more responsive to the needs of marine anglers? How can we improve the way we collect and report on the information we need to improve recreational fishing management? Should anglers and industry be more involved in those programs; and if so, how should their involvement be integrated? What additional funding and people are needed to make these improvements, and who should pay for them? And, what is the potential role of marine protected areas?

The third challenge is dealing with who gets the fish. Most of you are all too familiar with controversies over how harvests are allocated between commercial and recreational fishermen. A large part of the problem may be the differing conservation goals that require different management strategies. The commercial industry depends on steady harvest levels to support seafood production and maintain supplies. By contrast, recreational fishing relies on the quality of the angling experience. That requires lots of big fish.

If we recognize these different goals and deal with them objectively rather than through confrontation, we may be more successful in resolving user conflicts. A case in point is the legislation introduced by Louisiana Senator John Breaux to buy out commercial longline vessels using federal commercial and recreational funding sources, and to establish commercial longline fishing closures for protecting tuna, billfish and small swordfish. I recognize that the legislation is hugely controversial and its outcome is uncertain. However, the cooperation between commercial and recreational interests in developing the bill stands as a model for addressing user conflicts. Among the allocation questions that we will talk about, are there better ways of dividing up marine fish resources among recreational and commercial users? Are limited entry and proprietary rights systems appropriate and workable? What are the alternatives to quota management in marine recreational fisheries?

The fourth challenge is not a traditional issue but is one of growing concern. It's the increasing effects of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA), as well as other environmental laws on recreational fishermen. In California, for example, sea lions have become a real problem for charterboat captains. The MMPA prohibits killing aggressive animals and requires us to develop non-lethal methods for scaring them off. Bob Fletcher came up with an idea for a non-lethal

acoustic deterrent. However, this device, which we affectionately call "Bob's Banger," has raised concerns about its impact on whales and other marine life. As a result, we have faced enormous roadblocks, both internally and with other agencies, to get the necessary permits for wide-scale testing. With respect to the Endangered Species Act, anglers up and down the West Coast are struggling to maintain traditional recreational fisheries and still protect listed salmon and steelhead. One promising approach is selected fisheries for hatchery marked fish. The hatchery fish have their adipose fins clipped so fishermen will know they are the keepers, and wild, unmarked fish can be released. Unfortunately, it has been more difficult to provide protection for threatened runs and maintain fishing for salmon from healthy wild runs because we have no simple way to identify fish from endangered or threatened populations.

The fifth and final challenge for the symposium, and also for NOAA Fisheries, is improving our communications and outreach. This conference is intended to build better lines of communication and improve dialogue among all stakeholders—government, anglers, the marine recreational industry, and others. We are not going to solve all of our problems today, but I do expect to leave here with a clearer understanding and stronger foundation for addressing them. One step toward improving outreach is to construct more harmonious partnerships and to work cooperatively toward their achievement. As some of you know, over the last few years NOAA Fisheries has entered into partnerships with several non-federal organizations interested in the management and enhancement of and participation in marine recreational fisheries. These Memoranda of Agreement (MOA) are simply statements of mutual cooperation and commitment to work together to carry out projects and activities which generally do good things for marine recreational fisheries. Among the organizations with whom we have already formed partnerships are the Paralyzed Veterans of America and the National Marine Educators Association, each of which is represented on one of the panels later in the symposium. Another organization is the National Fish and Wildlife Foundation, which is acting as our fiduciary agent for the symposium. Yet another is Girl Scouts of America. And, today we are announcing the addition of three new partnerships with major interests in marine recreational fishing. On behalf of NOAA Fisheries, I am pleased to announce cooperative MOAs with the American Sportfishing Association, BOAT/US, and the International Game Fish Association. I hope that there will be more agreements in the future as a result of this conference. This symposium should be a starting point for moving together into the new century with a common understanding of the issues and opportunities that lay before us. While the issues are numerous, the opportunities are enormous.

I guess I'm supposed to end with a fish story, so here goes. Larry and Edith, husband and wife, were both addicted anglers. They lived for the

opportunity to fish and retire in a little fishing camp in Florida. Finally, the long awaited date arrived. Sadly, on their first day of retirement they were both killed in a terrible car accident. They awoke at the Pearly Gates and Saint Peter was there to greet them. Suffice it to say, neither was happy with the situation. Larry in particular was irate. "Do you mean to tell me that after all the years of saving, Edith and I won't be able to fish together in our retirement?" Larry shouted at Saint Peter. Saint Peter replied, "It's true. You're both in heaven but you need not be disappointed, the fishing is excellent. All the fish here are trophy sized, you don't need a license, and there are no fees, no bag limits, no size limits." On hearing this news, Larry turned to Edith and said, "Did you hear that, Edith? If it hadn't been for you and all that oatbran that you forced us to eat, we could have gotten here a lot sooner." Thank you again for coming, and enjoy the symposium. We look forward to hearing from you.

Mr. Bill Price

Thanks very much, Penny. Last but not least, it gives me great pleasure to introduce the other individual without whose support this symposium would not have been possible. I'd like to introduce Dr. Ron Baird, the Director of the National Sea Grant College Program.

Dr. Ronald Baird,
Director of the National Sea Grant College Program

Thank you and good morning. On behalf of the National Sea Grant network and its 29 university-based programs, welcome to what I know will be a seminal event, one that challenges us to develop new ideas, paradigms, and approaches to fisheries management in concert with dramatic demographic and economic changes already before us in coastal America.

My thanks and appreciation also to the other sponsors, and especially to the organizers of this symposium, for their foresight in subject matter and the hard work of putting this together. You know, these events just don't happen with the signing of a check. We owe them all a debt of gratitude for the hard work in organizing this symposium.

When Dick Schaefer and Emory Anderson approached me about co-convening an event, we agreed that recreational fishing represented a critical and growing concern for fisheries management. However, if we were going to do a symposium, it was not going to be a learned discourse on the science of fisheries management, or worse yet, more government speak, but a participative, provocative happening with the views of a broad section of constituencies represented. Dick and crew have developed just such a format, so I will echo Penny Dalton's plea by saying that we need to hear from you or otherwise your views remain unheard and our collective take home is less than it could have been.

Sea Grant has had a long history of investing a considerable part of our portfolio in research and outreach in fisheries management, and we plan to use the results of this meeting to help shape our future direction in our fisheries programs.

Penny also gave an excellent overview of many of the management issues and the need for new management approaches in concert with the demographic and societal trends that are impacting our coasts. And, Penny is right. We are well into a major change in how we manage marine fisheries and what's expected from resource managers in response to changing socioeconomic pressures from society at large. So, my purpose this morning is to leave you with a few thoughts that might be helpful in framing the issues before us and in provoking thought about their implications for the future management of our nation's fisheries.

My first point is that we need to be aware of the magnitude of the numbers we are dealing with in the recreational fishing equation, and their socioeconomic context in natural resource management.

The second is we must comprehend the rapid rates of change, most of which are non-linear, and the many environmental and socioeconomic variables affecting marine fisheries and the urgency imposed by this collective time-line for realistic, effective, and politically acceptable solutions in resolving multiple use issues.

Third, whenever we consider fisheries management problems, never lose sight of the importance of the productivity of ecosystems and the relationship of productivity to habitat quality and to the potential yield of fish stocks in given geographic regimes.

And, my fourth and final point is that enlightened public policy does not arise innately from the human gene pool. It arises because of the collective wisdom and knowledge of mankind and must be transmitted through education to each generation. Education, broadly defined, must be a critical element of public policy and successful resource management practices that emerge therefrom. So must it be for recreational fisheries.

To help stimulate your imagination and perhaps better illustrate what I mean, here are some specific examples. In 1998 over 320 million fish were taken in recreational fisheries, equal in weight to over 5% of all commercial landings. The fishing mortality terms attributed to sportfishing in our population dynamic models for many stocks is a significant number, and this is very different from my graduate school days. In 1998 there were over 10 million saltwater anglers, and the sportfishing economic output, by some measures, was over $25 billion. The saltwater angler expenditures alone in 1998 were almost three times the ex-vessel value of domestic commercial fish landings. Concerning rates, you heard about the striped bass recreational fishery having a fivefold trip increase in a decade. Since 1972 the number of recreational boats has doubled and the number of inboard motorboats has tripled, and I've been told that 72% of those boat

owners fish. The charterboat business, an increasingly important form of commercial fishing, is booming. Note also that domestic commercial fish landings are up almost threefold since the '70s. In 1998, coastal states in aggregate earned 85% of total U.S. tourist revenue. By 2010 the coastal population density in the U.S. is expected to increase by 50% from 1970 levels, to over 300 people per square mile.

These numbers are huge and, for you modelers, the growth rates are non-zero second derivative stuff. It's critical that we comprehend the enormity of what's going on in the world in the short time-frame in which it's occurring.

In turning to productivity, fisheries models often consider such things as long-term potential yield of fish stocks. But remember that such numbers rest on the assumption of quasi-stable productivity of marine ecosystems, factors that affect productivity, affect yield long- and short-term.

We all know about the increasingly adverse environmental impacts from population growth, but fishing activities also impact the environments directly and indirectly in many ways. For instance, rapid increases in boating can have many adverse side effects to environments from a variety of causes. Note also that recreational fishing is often highly site- and stock-specific and usually inshore. There are large, regional variations. For instance, over 40% of all recorded sportfishing catches occur in the Gulf of Mexico, while only about 9% occur on the West Coast. Productivity considerations are critical, and we need to think ecologically to assure healthy fish stocks.

With regard to education and outreach, it is evident to those of us dealing with coastal issues that the reconciliation of environmental protection and economic development in fisheries will require environmentally responsible behavior and a knowledgeable citizenry that is participative in setting public policy. In that regard, I am pleased to report that there is real interest in Congress in supporting a joint and cooperative outreach effort between Sea Grant and the National Marine Fisheries Service that includes constituent participation in planning and coordination. The purpose is to better inform and engage our fishing public, both commercial and recreational, in fisheries management and policy issues. That is an example of the kind of new approaches we need to reach broad consensus on management issues.

Finally, I am reminded of Dr. Franklin's remarks during an earlier, somewhat stressful time in our country's history, to wit, "We must hang together in resolving these issues before us, or most assuredly we will all hang separately." We are all in this together.

Keynote Panel—A Vision of Things to Come: Expectations and Realities

Moderator
Mr. Richard Schaefer, Chief, Office of Intergovernmental and Recreational Fisheries, National Marine Fisheries Service

Rapporteur
Mr. James Falk, Director, University of Delaware Sea Grant Extension Program

The Fisheries Resources

Dr. William T. Hogarth, Regional Administrator, Southeast Regional Office, National Marine Fisheries Service

Dr. Hogarth discussed the mission of NMFS, its stewardship authorities, and its constituents and partners. He noted that there are 22 coastal states, along with Puerto Rico, U.S. Virgin Islands, American Samoa, Guam, and Northern Mariana Islands under NMFS jurisdiction. He further indicated that there are eight regional fishery management councils, three interstate marine fisheries commissions and numerous international relationships (e.g., International Commission for the Conservation of Atlantic Tunas; Inter-American Tropical Tuna Commission; MEXUS-Gulf and Pacific; Intergovernmental Oceanographic Commission, Subcommission for the Caribbean and Adjacent Regions; Western Central Atlantic Fishery Commission; and Bi-Lateral Agreements with Colombia, Mexico, and Canada) to manage fishery resources in the United States.

In 1998, there were an estimated 9.5 million U.S. saltwater anglers taking approximately 60 million trips and catching 312 million fish. Anglers spent about $8.7 billion, which created an overall economic impact of more than $25 billion. More than 288,000 individuals were employed in occupations related to saltwater fishing, creating $6.7 billion of salaries and wages.

Between 1997 and 1999, the number of managed fishery stocks by all U.S. commissions, councils, and NMFS increased from 727 to 904. In 1997, 86 of the stocks were overfished (12%), 183 were not overfished (25%), 10 were approaching being overfished (1%) and the status of 448 stocks was unknown (62%). In 1999, 98 of the stocks were overfished (11%), 127 were not overfished (14%), 5 were approaching being overfished (1%) and the status of 674 stocks was unknown (75%). The councils and NMFS make decisions as to how to allocate total allowable catch between commercial and recreational fishers. The Gulf of Mexico Fishery Management Council, for example, allocated 68% of the king mackerel catch to recreational sportsmen and 51% of the red snapper catch to the commercial sector. NMFS made the decision to allocate 100% of the billfish catch to recreational fishermen.

Another tool used to provide spatial conservation of fisheries resources is the creation of Marine Protected Areas (MPA). These areas are set aside by fishery managers to rebuild or maintain a stock, or protect essential fish habitat. A number of examples were provided by Dr. Hogarth, including the Gulf of Mexico black and gag grouper closed areas, the Caribbean Hind Bank Marine Conservation District, the South Atlantic Oculina Bank Habitat Area of Particular Concern and the Sitka Pinnacles Marine Reserve, which is under Secretary of Commerce review.

There have been a number of successful fishery recovery stories due in part to successful management measures put in place by various councils and commissions, particularly along the Gulf and East Coasts of the U.S. The Gulf of Mexico and South Atlantic migratory groups of spanish mackerel, Gulf of Mexico migratory groups of king mackerel, East Coast stocks of striped bass, and red snapper, red drum, jewfish, haddock, yellow-tail flounder and Atlantic weakfish are all showing signs of recovery. It is interesting to note that in the North Pacific, particularly Alaska, fishers have not yet experienced the need for management measures to recover an overfished stock.

Litigation is becoming a more important component of managing fishery stocks. NMFS currently has more than 100 pending litigation actions by a number of groups. NMFS will vigorously defend and enforce regulations and would rather work with constituents to avoid costly and lengthy litigation. The philosophy of NMFS is that it would rather spend the resources on research to resolve concerns rather than engage in litigation, and welcomes any input on how it can do a better job.

Future issues of importance include how to regulate the fishing industry. A number of tools are considered including, bag limits, seasons, “no sale” for fish caught by recreational anglers, managing the “for-hire” fishery as commercial or recreational entities, stamps for overfished species, and better data management.

NMFS actively seeks partnerships from any and all organizations and individuals to work with them on the process of managing fisheries. Partners can play an integral role in the regulatory process by becoming a member of a council’s advisory panel, attending and participating in meetings with the councils and NMFS, providing constructive comments to the councils and NMFS during public review periods, and writing letters to the councils, NMFS, and elected officials and informing them of concerns.

Dr. Hogarth concluded by asking the question, “Can our fisheries be sustained?” The path is not an easy one but there are laws, science, and willpower to get it accomplished. Major issues have been dealt with in the past, overfished species have been identified, and some threatened species have been restored. Common ground must be developed for constituents, scientists, regulators, and others to work together to achieve the goals set forth.

Management and Regulation

Dr. Russell Nelson, Director of Marine Fisheries, Florida Fish and Wildlife Conservation Commission

Dr. Nelson began his presentation by talking about growing up in the Midwest and his early freshwater angling experiences. He noted that he always took conservation very seriously. He further relayed his experiences saltwater fishing along the Northwest and Southeast Coasts of the U.S.

In his current position, he oversees management of Florida saltwater fisheries, and he termed Florida a recreational angling state. Of the 14 million residents, there are an estimated 3 million saltwater anglers. Marine recreational fishing contributes approximately $6 billion to the state's economy annually. Recently there had been slow growth in the number of fishing licenses purchased by residents, but that is increasing due to the rising number of tourists who are buying them.

He discussed the early attempts to manage certain marine species as gamefish in Florida and mentioned that tarpon were designated gamefish in the 1930s and snook were designated a sport species in 1952. Other species nationally have been so designated. As these species are protected as gamefish, fisheries managers begin to see more effort directed toward them by sport anglers.

An article by Courtland Smith of Oregon State University entitled, "Life Cycle of Fisheries," highlights the history of fish exploitation. During the last century, when stocks were high, commercial effort increased and biomass declined. As our nation's population increased, recreational anglers also increased and stocks further declined, and valuation tended towards the recreational fishing sector. The final phase in the cycle is an aesthetic phase, where even marine mammals (whales, porpoises) are exploited for their aesthetic value. Catch-and-release techniques by anglers can also be viewed as an aesthetic use of sport fish.

Land-based (terrestrial) fishing and marine-based fishing have experienced similar life cycles for many species. There has been a move away from commercial exploitation to a focus on recreational fishing. This shift is difficult for fisheries managers to adjust to. Thus the life cycle is maintained as status quo.

The transition in the past 30 years has focused on the growth and importance of marine recreational fishing. Throughout the 1980s and 1990s, we have witnessed the growth of an organized marine recreational fishing industry as both a conservation and political force. Examples include NMFS recognizing the importance of the anchovy fishery in 1983 as an important forage species for recreationally caught fish. When it became evident red drum were being overfished, they were set aside as exclusively sport fish. NMFS, along with the councils, also designated billfish as a sport only species.

Fisheries management is done today in a "status quo" fashion, or by doing things like they have always been done. This is safe from a political standpoint, and no specific allocation decisions get made. It is not the best

way to operate if you are trying to optimize your fishery stocks. Good plans are needed to encourage the restoration of stocks. Some stocks that will require difficult allocation decisions in the future include king mackerel and red snapper.

Why is it so difficult to manage fisheries? There are two important reasons. First, it is a politically sensitive issue in that there are "winners" and "losers" in an allocation scheme. All parties usually are not equally satisfied with the allocation decisions. Second, fisheries managers do not receive formal training in the process of allocating these resources. They need to be better trained to be able to make stronger, effective allocation decisions. Allocation decisions made in the future will continue to be difficult, and they will continue to be made without total agreement from all parties.

There are many challenges facing fisheries managers in the future. Decisions need to be made about the "for-hire" fishery. Are they considered commercial or recreational? How will they be counted in allocation decisions? Catch-and-release fishing will continue to be an important and vital tool to help conserve stocks. Marine protected areas and the potential limitations to access will still need to be further discussed. Certain conservation groups may be overzealous in their proposals to close certain areas to recreational anglers and this could lead to angler conflicts unless their concerns are taken into account. Finally, there is the issue of more than 50 state fish and wildlife agencies who derive revenues from license fees. It is doubtful we will ever see limits on the total number of anglers participating in the sport.

Dr. Nelson ended his presentation by issuing a challenge to fisheries managers who want to forecast the future of fisheries management: "*We can predict the future, by inventing it*."

The Anglers

Mr. Mike Hayden, President, American Sportfishing Association

Mr. Hayden began his presentation by noting that fish stocks are improving, but there still remains much to be done. Prior to the 1984 Atlantic Striped Bass Conservation Act, stocks of striped bass were so depressed that anglers were rarely targeting this once popular sport fish. As tighter restrictions took effect, the populations began rising and sport anglers began returning to the fishery. Between 1987 and 1998, the number of angler trips increased five-fold and the amount of angler expenditure eight-fold. The striped bass story demonstrates that the right regulations can be an effective management tool.

Sportfishing is a recreational activity and the rules on game fish are incredibly complex. To demonstrate this complexity, he presented the following example: If you are fishing on the Hudson River Estuary in New York, you are allowed to take one striped bass per day over the 28-inch limit, unless you are on a charter boat where you are allowed two fish that size. If you are above the George Washington Bridge you can land any fish

over 18 inches. However, just over the border in New Jersey, you can keep one fish measuring between 24 and 28 inches and one fish over 28 inches, unless of course you have a state tag that allows you to take a second fish over 28 inches.

How can a weekend angler keep all of this straight? The angler can't be burdened with regulations that counteract each other. We should be working to improve sportfishing. The harder it is, the less likely it is that anglers will choose fishing. The angler must be kept in mind as regulations are developed because he is the whole basis of the economics for the sportfishing industry and the conservation of game fish.

The angler understands how important healthy fish stocks are. Without fish there is no sportfishing industry. It is important to note that the recreational angler was among the first marine conservationists. Fifty years ago the industry supported the 10% manufacturers tax on sportfishing equipment. The Wallop-Breaux excise tax combines with a tax on motorboat fuel sales and license fees for anglers to contribute nearly $750 million per year toward projects that improve fish habitat, access, and angler education in fresh and saltwater.

Saltwater anglers also spend about $8.5 billion on equipment, supplies, and travel. These dollars create an economic impact of $25 billion annually. That is slightly more than the contribution of the commercial fishing sector, even though the contribution was made by landing only 2% of the commercial totals. Each fish landed by a sport angler has 40 times the economic value of a fish landed commercially.

This productivity would not be possible if not for the anglers' voluntary use of a great conservation tool—"catch-and-release." According to NMFS, the overall release rate by recreational anglers has risen to nearly 60%. However, for anglers to participate in catch-and-release fishing there must be fish to be caught. Spending quality time with family and friends outside in nature is certainly an important aspect of the fishing experience, but how often are you going to repeat the trip if you never catch any fish? The influx of funds from excise taxes placed on fishing gear and other outdoor products is critically important in helping to maintain a healthy aquatic environment. Without this healthy environment and abundant fish populations, there can be no fishing.

There is a new threat emerging, however, that would limit access to the water for saltwater sport anglers. It is through the creation of marine protected areas, also known as no-fishing zones, sanctuaries, or parks. Few would argue that wilderness and biological diversity are not worthy of protection. The national system of terrestrial parks, refuges, and wilderness areas were established to conserve these important resources while allowing for their public use and recreational enjoyment. The marine protected area proposals do not hold these recreation opportunities in the same regard. Instead, recreational fishing is lumped together with other commercial activities and banned outright. Marine protected areas are not the catchall

solution to marine fishery conflicts as some suggest. Everyone wants an abundance of marine life, but it can be achieved with size limits, catch limits, and closed seasons while continuing to allow meaningful access for all citizens to the nation's public waters.

The 1996 Magnuson Act reauthorization has put us on a path toward healthy marine fisheries. The next challenge in marine recreational fisheries is to develop a system that allows the rebuilt stocks to be transferred fairly and equitably from one sector to another. Fishery allocation may always be contentious, and the current framework is outdated and fractures the fisheries community instead of pulling it together to develop true solutions. The end result is an industry bruised and fish no better off than before.

The original Fisheries Conservation and Management Act, which gives authority to the councils, was designed to promote U.S. commercial fisheries. We are just now beginning to realize the positive economic, social, and conservation impacts that recreational fishing provides. Fisheries managers need to re-evaluate how fish are allocated so that we can better meet the needs of the American public.

There are numerous fisheries that support a recreational and commercial harvest. While the allocation between groups for these species has not changed significantly in the past, the interest among recreational anglers has. As more people move to our coastal areas, this trend will only continue. For some of these fish, it may make much more sense to set aside the entire quota to the public, for their recreational enjoyment. For others it may not, but the point being that the current system does not have a mechanism to allow large shifts in quota from one user group to another. Such activity takes place in the private sector daily. Our market economy is based on goods and services of every type being sold to the benefit of both the buyer and seller. However, when it comes to marine fisheries, there is no comparable service for buying and selling what one user group values over another. Society benefits when resources are distributed to where the market share is.

Mr. Hayden concluded by forecasting steadily improving fish stocks forming the foundation for an increasingly enjoyable recreational fishing experience. The American Sportfishing Association is committed to reaching this goal along with all interested groups and organizations.

Keynote Panel—Discussion

Dr. David Dow, NMFS, Northeast Fisheries Science Center, asked if there were proactive ways to get groups together to solve issues (e.g., gear conflicts, bycatch, marine protected areas) rather than being reactive?

Mr. Mike Hayden responded that the economic value of the resource should be considered. Use the free enterprise system, and let the market place work. Sell quotas or "buy-outs" or use transfer rights from one sector to another.

Dr. Hogarth noted that throughout the history of fishing, pressure has increased on the resource. Commercial interests think that recreational fishing forces them out of business. The use of certain gear affects essential fish habitat. We need to get people to sit down together, and outreach is a necessary component of the process. There is a need to communicate whether we want certain species allocated to either the commercial or recreational sectors.

Ms. Leigh Taylor Johnson, Marine Advisor, University of California Sea Grant Extension Program, commented that people don't like excessive regulations and restrictions on leisure activities, such as recreational fishing. An educational approach that involves recreationists as partners has worked well in reducing pollution by recreational boaters. It could be very effective in working with anglers to protect fishery resources.

Mr. Schaefer agreed and stated that we need to identify all of the partners, including government, industry, and anglers to discuss the issues.

Mr. Bob Mahood, Executive Director, South Atlantic Fishery Management Council, noted that there appears to be little support from the recreational angling community for marine protected areas. He asked if there is support for protected areas, and are we going to run into major problems trying to establish them?

Mr. Hayden responded that recreational anglers are at the forefront of conservation. Marine protected areas are not based on good science. Recreational anglers can support reasonable regulations on fish in trouble. If there is opposition to protected areas, we need to develop regulations based on good science based on the stocks that are in trouble.

Mr. Donald Bodenmiller, Oregon Division of Fish and Wildlife, described the Pacific halibut management situation off Oregon, where the number of open days for directed halibut fishing off central Oregon had gone from over 80 in 1992 to six in 2000 and that part of this problem was allocation decisions made by the Pacific Fishery Management Council that did not match the distribution of abundance. He asked if there had been any coast-wide experience with adopting separate quotas for charter anglers versus private boat anglers or lottery draws for species tags like those used in controlled big game hunts?

Dr. Nelson responded that it sounds like a political problem within the state. If you were forced to allocate between different groups, possibly a lottery system would work.

Capt. Tony DiLernia, New York charter boat captain, and member of the Mid-Atlantic Fisheries Management Commission, commented that based on input from anglers, there are conflicting regulations between states on adjoining water bodies. How can this situation be improved?

Mr. Hayden replied that we need to employ a multi-state jurisdictional approach. We should listen to each state's constituencies, even though it is probably not the best way to manage the resource. The best example is the striped bass fishery, where the federal government directed states to close

the fishery. It is a political problem and most decision makers can't see beyond state borders and fish don't vote. We need to be visionaries and think of holistic approaches to managing fisheries.

Mr. Mac Rawson, Director, Georgia Sea Grant, asked, if we want to engage in single species management and allocate larger fish for sport fishermen, what does this do to the predator/prey relationship? What is the impact on the ecosystem with this approach to management?

Dr. Nelson responded that he would advocate clear allocations based on good science that maximizes the benefits to the fishery. We need to manage ecosystems and this approach will become more important in the future. It is not important who catches the fish; it is the overall mortality we need to be concerned about.

Dr. Hogarth replied that single species management does not work, it creates more problems than it solves. Marine protected areas will protect fish and the ecosystem and we need to manage ecosystems as opposed to single species.

Mr. Dick Stone, National Marine Manufacturers Association, commented that there is a need for two-way communication between managers/regulators and anglers. It is equally important to manage smaller fish, not just the "trophy" fish. There is a need for good data; recreational fishermen often times "lose out" because of lack of data to support their causes. It is necessary to continue outreach education to the recreational angling community.

Mr. Randy Fisher, Executive Director, Pacific States Marine Fisheries Commission, asked the panel what recommendations they could suggest to improve the existing management council process?

Mr. Hayden replied that during reauthorization discussions, we need open forums. We need to allow all stakeholders to have input. We need to get past narrow-minded thinking of the past where "status quo" thinking is the safest territory for decision makers. We need more than simple changes to the law; we need to give consideration to new ideas—begin with a "blank slate" and think about what is in the best interest of the resource.

Dr. Hogarth replied that we need to have balance on the councils. The nominees should be effective voices for their constituents. Current council representation is based on historical participation in the fishery, but there is no data to support this. The Magnuson Act is a good Act. We need to tinker with the interpretations, but we don't need to change the entire Act.

Dr. Nelson responded that we might need to look at the Magnuson Act in its entirety. During the last reauthorization, major changes were made to it. Changing language is one thing, but changing outcomes is another. We need all the players to come to the table. He envisions a new process on how federal management of fisheries occurs. We need a new political contract to do a better job.

Panel II—A Critique of the Current Processes and Institutions for Recreational Fisheries Management: Are They Responsive to the Needs of Marine Anglers?

Moderator
Mr. Michael Nussman, Vice President, American Sportfishing Association

Rapporteur
Ms. Virginia Fay, Atlantic and Caribbean Recreational Fisheries Coordinator, National Marine Fisheries Service

State Government Perspective

Ms. Patricia Wolf, Southern Marine Manager and Offshore Ecosystem Coordinator, California Department of Fish and Game

Ms. Wolf discussed a new era of fisheries management for the state of California through the Marine Life Management Act (MLMA) of 1998. The state is transitioning into the new process enacted by the MLMA through implementation of a comprehensive plan encompassing socio-economic, habitat, and biological concerns.

The traditional process for the state to establish fisheries regulatory measures was for an action to be passed by the California legislature, then moved through the California Fish and Game Commission, and finally passed to the California Department of Fish and Game for implementation. Groundfish and coastal pelagics are managed through the Pacific Fishery Management Council. The legislature, therefore, controls commercial fishermen and so the traditional management process was perceived as not providing open access to recreational fishermen. Recreational fishermen and other interest groups could participate in the management system though three venues. First, public access to the traditional management process was gained through lobbying the legislature or through public meetings held by the California Fish and Game Commission, at which the public may submit written or verbal comment. Sport regulations were handled only during a biannual cycle. This perceived lack of access led to the second venue, grass roots initiatives to manage fisheries rather than through the legislature. Initiatives such as the gill net ban were passed at the ballot box. The third venue for public access to the California Department of Fish and Game was through advisory panels and commercial fisheries meetings. These meetings, however, were species- or fisheries-specific and were not broad or inclusive.

The MLMA passed in 1998 and was enacted in 1999. Milestones will be realized by late 2001. Standards identified in the MLMA include: conserve ecosystem health and diversity; sustainable use and rebuild depressed fisheries; bycatch at acceptable limits; habitat maintenance, enhancement, and restoration; and broad and inclusive participation by everyone (e.g., collaborative process for the Channel Island reserves and the white seabass hatchery program).

The MLMA instituted changes to the traditional management process. The legislature retains control over some commercial fisheries and strongly supports moving away from co-managing fisheries. The California Fish and Game Commission will continue its existing fisheries authority, will write fisheries management plans (FMPs) for nearshore fisheries and the white seabass fishery, and will be involved in emerging fisheries. The California Department of Fish and Game established marine regions, based on an ecosystem approach, and completed a Strategic Plan developed by facilitated focus groups and surveys. The themes from the focus groups and surveys were for management to be science-based and proactive; an increase in partnerships and outreach; and adequate and stable funding. As for partnerships, the Department had to acknowledge that the old way of doing things had to change. The management process has evolved now such that decisions are adaptive and based on best available science, the process is open and seeks involvement, collaborative and cooperative approaches are encouraged, and the interests of fishing communities are addressed. Fishery management plans for white seabass and nearshore fisheries will be drafted for public review by 2002.

What has been done so far under the MLMA by the California Department of Fish and Game? The Department received $500,000, has increased enforcement and scientific capabilities, has instituted interim management measures such as control dates, has initiated data contracts, and initiated a constituent involvement process. Feedback by the recreational constituency is that there is now equitable access, decisions are based on science, there is a broader involvement of the sportfishing community, there are simple and more enforceable regulations, and the Department needs better recreational fisheries information.

In closing, the California Department of Fish and Game is looking forward to making the new process work.

Interstate Marine Fisheries Commissions Perspective

Mr. John H. (Jack) Dunnigan, Executive Director, Atlantic States Marine Fisheries Commission

On behalf of the three interstate marine fisheries commissions, Mr. Dunnigan began by stating that everyone needs to remember that the commissions represent the states. So, what is the role of the commissions for the recreational community? On one hand, of course the states are responsive to the needs of the recreational community but on the other, there still are problems being responsive. The commissions need to emphasize the opportunities states have for marine fisheries management but the commissions also need to find ways for the states to work together. The management aspects of the commissions are that the member states share resources so they must work together for a common purpose. These aspects include law enforcement, habitat, statistics, and cooperative management activities such as interstate fishery management plans.

The next question to ask is whether the states are being responsive. Mr. Dunnigan said that the answer is yes, to a certain extent sure, and we still have a long way to go. What is being done right? The status of striped bass, summer flounder, and weakfish along the Atlantic coast are good examples. These successes are because institutional mechanisms have found a way to work together and the states have the ability to be flexible and are more able to be flexible and responsive than the federal government.

What are areas that to a certain extent are being done right? Cooperative fisheries statistics is a prime example. The Pacific States Marine Fisheries Commission was the first to implement a cooperative interstate fisheries statistics program, PacFIN. The Gulf States Marine Fisheries Commission followed with the FIN Program (RecFIN and ComFIN). The Atlantic States Marine Fisheries Commission (ASMFC) was last to implement an interstate fisheries statistics program through the Atlantic Coast Cooperative Statistics Program (ACCSP) due to the sheer number of partners (23). The ASMFC and all its partners developed a great working model for statistics in the ACCSP, however, resources are lacking to fully implement it.

What are the areas that are lacking? The opportunity to be more responsive to the recreational community include: matching biological information to what fishermen are seeing; socio-economic information and the disconnect between management lead time and real-life business decisions of the charter fleet; figuring out a better way for advisors' involvement in the management process—it is difficult to obtain a quorum at recreational fisheries advisory panel meetings; communicating science and management to fishermen needs to be better, even though communicating angler ethics has gone well, and the consciousness of the issues needs to be raised to the general public and not just fishermen; and finally, regulating a healthy fishery—there is little experience with that since management has been primarily focused on recovery rather than developing a vision for managing success.

In closing, Mr. Dunnigan alerted attendees on the status of the Conservation and Reinvestment Act legislation, labeling it the most significant funding mechanism since Wallop-Breaux in 1984.

Regional Fishery Management Councils Perspective

Mr. Robert Mahood, Executive Director, South Atlantic Fishery Management Council

In order to address the question, Mr. Mahood queried the other seven regional fishery management councils. The Magnuson-Stevens Act (Act) is unique in that the users of the resources are the stewards of the resource. The Act (Section 301(b)(2)(B)) addresses the appointment of council members as follows: "The Secretary, in making appointments under the section, shall, to the extent practicable, *ensure a fair and balanced apportionment*, on a rotating or other basis, of the active participants (or

their representatives) *in the commercial and recreational fisheries* under the jurisdiction of the Council," (emphasis added). While the Act states "ensure a fair and balanced . . .," it is very difficult to know what that means exactly.

Representation on the councils generally plays a major role in a particular constituency's perception of responsiveness to their concerns. From the 1999 NMFS Report to Congress on Apportionment of Members, nationally, 23 members (32%) represented recreational fishermen, 36 members (51%) represented commercial fishermen, and 12 members (17%) represented "other." Taking this a step further, does the council composition mirror the make-up of the participants in the fisheries in each council's jurisdiction and/or the fishery resources being managed? Looking from a constituency viewpoint, five of the councils do while three do not, but from a resources management perspective, all eight councils do. The following are some examples from a balance perspective. The Pacific Fishery Management Council has three recreational, three commercial and three others as members. This could be considered balanced based on both constituency and resources managed. The South Atlantic Fishery Management Council (SAFMC) has four recreational, three commercial, and one other as members. This is fair representation based on the resources, but not necessarily based on the constituency. The SAFMC has many more anglers than commercial fishermen in its region. Anglers generally harvest a larger part of the shared resources; however, some fisheries are primarily commercial. The New England Fishery Management Council (NEFMC) has two recreational, eight commercial, and one other as members. Recreational harvest of the resources managed by the Council are not significant compared to the commercial harvest and anglers have liberal limits and are generally allowed to fish in areas closed to commercial harvest. Since the fisheries under the purview of the NEFMC are primarily commercial, it can be considered to have a balanced representation. The North Pacific Fishery Management Council (NPFMC) has six commercial and one other as members; there are no recreational members. The NPFMC does not manage recreational fisheries, and does not have any recreational regulations, except in the case of halibut allocations to the charter industry. In the case of both the NEFMC and NPFMC, the coastal states or other bodies (e.g., International Pacific Halibut Commission, Atlantic States Marine Fisheries Commission) manage the recreational fisheries in, or adjacent to, the Councils' jurisdictions. Other factors involved with the ability of councils to be responsive to the needs of anglers include: state fisheries directors are obligatory members and represent their individual state's various user groups; charter and headboat operators are difficult to peg as recreational or commercial; and marine anglers that sell their catch are considered commercial (this is a big problem in the Southeast).

Marine anglers can provide input into the council management process by: becoming a council member, an advisory panel member, a recreational task force member, and/or a scientific and statistical committee member; attending scoping meetings, public hearings, and/or council meetings; and providing NEPA review comments and/or Secretarial review comments.

Regulatory mechanisms for marine anglers include bag and size limits, quotas, gear restrictions, closed seasons, and closed areas. In the council survey, two indicated that the complexity of their recreational regulations (how hard or easy are they to understand) are very easy, three easy, two hard, and one very hard. The SAFMC felt that their recreational regulations are difficult primarily due to the snapper-grouper complex (more than 70 species that are difficult to identify), with various bag limits, size limits and closures.

So, is regional fishery council management responsive to the needs of marine anglers? Yes and no. Relative to actual marine angler harvest, participation in the management process, and the results achieved, the answer is yes. However, the management system has become complicated and confusing for anglers, it often takes too long from council approval of management measures to implementation, and lack of biological, economic, and social data impedes management and contributes to a contentious and litigious atmosphere. These are all negatives that affect responses. The lack of enforcement and litigation resources also adversely affects responsive management.

In conclusion, Mr. Mahood stated that the Magnuson-Stevens Act management process is responsive to the needs of marine anglers within the constraints of the system. However, simplifying the management system and improving data collection would solve many of the problems and improve responsiveness for all resource users. The key is having the resources to meet the requirements of the Act.

Federal Government Perspective

Dr. Gary C. Matlock, National Centers for Coastal Ocean Science, National Ocean Service

Dr. Matlock began by saying that the question posed for this session might lead one to think that marine angling and recreational fishing are synonymous. However, from a federal perspective, they are not. The criteria used to determine whether marine angling is recreational fishing is whether or not the fish that are caught are retained by anglers or sold. If they are sold, then the angling that produced the fish was part of a commercial fishery, not a recreational one. The foundation for this conclusion rests in the Magnuson-Stevens Fishery Conservation and Management Act, where recreational fishing is defined as “fishing for sport or pleasure.” Therefore, Dr. Matlock stated that he would address the needs of only those marine anglers who do not sell any part of their catch at any time.

You may ask why be so picky in distinguishing between the guy who never sells any fish and the "recreational marine angler" who sells infrequently and only does so to help defray the costs of some fishing trips. Surely these "part-time commercial anglers" cannot have anywhere near the same effect as the full-time commercial fishermen. So, why can't they be managed as part of the recreational fishery? From the federal perspective, these anglers are part of the commercial fishery when they sell their catch, and as such, are subject to the same management as those who fish commercially all the time.

But, the management tools applied to commercial fisheries are not necessary in the recreational fishery. The reason? The objectives of the two activities are different. The commercial fishery, by definition, requires dead fish in the boat to exist. The recreational fishery does not. Can you imagine a commercial fishery surviving under a catch and release regime? Further, is it appropriate to allow some anglers who fish only recreationally to have their catches reduced by those who sometimes sell their catch, especially when the species involved is subject to overfishing or rebuilding? The federal perspective is that it is not; reference the Magnuson-Stevens Act Section 303(1)(14) which says, "to the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery."

Management of marine recreational fisheries is a relatively recent endeavor of the federal government. Until 1976, there was essentially no federal management of anyone. But passage of the 1976 Fishery Conservation and Management Act dramatically changed that. Anyone who fishes in the federal Exclusive Economic Zone is now subject to some kind of fishing regulation. Fishing mortality matters, no matter who causes it.

Why equate marine fishery management with regulation? Fishery managers really have only three ways in which they can effect changes in fish populations. They can regulate fishing mortality, modify habitat, or directly increase or decrease fish populations (e.g., stocking). In the marine environment, managers are usually trying to prevent habitat loss or restore damaged and degraded habitats in order to sustain some level of harvest. Even if they are successful in their habitat protection efforts, fishing mortality still needs controlling. Attempts to modify directly marine fish populations are relatively few and generally unproven, so this tool is not really available in most settings. That leaves fishing regulation as the managers' most often-used mechanism to affect fish stocks. It is an indirect approach, and its application inevitably leads to impacts on people.

The people impacts of marine fisheries management (i.e., regulation) in the U.S. have evolved rapidly and dramatically during the past 25 years. As we replaced commercial foreign fishing off our coasts with oversized domes-

tic commercial fleets and increasing recreational demands, we imposed every type of regulation known to man to forestall the impacts of overfishing on fish stocks. But, we generally responded with too little too late. We are now trying to match fishing mortality with the fishes' ability to recover from excessive fishing. Almost all U.S. commercial fisheries are now subject to some kind of limited entry in addition to the myriad of quotas, size limits, gear restriction, fishing seasons, and closed areas. Recreational fisheries are generally now subject to many of the same kind of regulations, and limited entry is even being considered for some charter boat fleets.

The approach being taken to manage marine recreational fisheries federally is essentially the same as has been applied to the commercial sector. We are evolving from an unlimited, open access (even encouraging entry) system to managing how, when, where, and with what fish can be taken by prohibiting completely the retention of some species to considering limited entry in recreational fisheries.

The regulatory processes used to manage recreational fisheries are also the same as those used for commercial fisheries. Management objectives are identified by the Secretary of Commerce either through the eight regional fishery management councils or directly in the case of Atlantic highly migratory species. Recommended regulations are then developed by the councils and implemented (if approved) by the Secretary. The regulations can then be challenged in the legal system. Oh, yes, management is also done directly by the U.S. Congress or indirectly by individual members. In short, the current management of marine recreational fisheries is complex, tedious, difficult, burdensome, controversial, fluid, and uncertain.

But, are they responsive to the needs of the marine anglers? Dr. Matlock argues that, at best, they are probably not. He also argues that the federal manager probably does not even know if the needs are being met (i.e., what does it take to satisfy an angler?) because the needs are at best poorly known. In any event, there are currently too few fish available to support the current demands for harvest. Of the federally managed fish we have studied, 98 are overfished and another five are approaching an overfished condition. The status of another 674 stocks are not even known. Further, in trying to meet multiple objectives for fisheries, the recreational angler does not receive all of the available harvest (except in the case of Atlantic billfish). So, even fewer fish are allocated to these fishermen than would be available if only recreational fishing was allowed, and the allocation to individual recreational anglers is reduced even further as the number of participants increases. So, for those anglers who "need" to take fish home, their needs are not being met.

The needs of marine anglers are diverse and it is unimaginable that all of them are being met or satisfied. For example, some anglers care very much about how many fish they take home while others are satisfied by the experience of just catching fish. But, the number of species for which only

catch and release is allowed by the federal government is increasing without regard to these diverse needs because of the condition of the fish stocks. It is now illegal to retain the following fish: jewfish, white sharks, 19 species of Atlantic sharks, many corals, and Nassau grouper in the Atlantic, Gulf of Mexico, and Caribbean; red drum in the Atlantic and Gulf of Mexico; Atlantic salmon, live rock, and striped bass in the Atlantic; three species of butterfly fish and all seahorses in the Caribbean; pelagic armorheads, alfonsin, and ratfish in the Western Pacific; and several salmonids in the Pacific Northwest. There is little doubt that these prohibitions are not meeting the needs of those who want to retain some of these species.

Charter captains often argue that marine anglers need to keep fish, a lot of fish. So, the imposition of small bag limits or of closures (retention prohibitions) on their clients are often met with stiff opposition. Red snapper in the Gulf of Mexico and Atlantic bluefin tuna are two cases in point. The recreational fisheries for both species are subject to small bag limits and quota management, and the regulations have been challenged in federal courts as being economically devastating to charter vessels. The uncertainty associated with closures and the low bag limits used prior to closures result in anglers reducing the use of charter vessels in these fisheries. Clearly, the needs perceived by anglers and their co-litigants are not being met in these circumstances.

However, the examples used focus on the needs of anglers for dead fish in the boat. There are other needs beyond those related to the fish about which we know even less than the fish ones. For example, we know from some fisheries research that some anglers care about things like crowding, i.e., the distribution of anglers spatially and temporally. If an area is overcrowded with too many anglers, the needs of those who dislike fishing in that setting are not met. As federal regulations reduce the time and area within which allocations can be taken, crowding can result in unfulfilling experiences for some anglers.

So, how do we get from here to satisfying the unmet needs of marine recreational anglers? Dr. Matlock stated that he believes that a multipronged, simultaneous approach is required. We must use our existing processes and institutions to eliminate and prevent overfishing. We must use better social science to determine allocations among fishermen. We must expand our scientific research into the areas of societal benefits that can be achieved from fisheries and into the area of angler satisfaction. A precautionary approach works more for recreational than commercial fishermen. And finally, we must increase our education efforts to create angler understanding that marine fisheries resources are finite, that regulation of fishing mortality is inevitable, and that compliance with the internationally adopted Code of Conduct for Responsible Fisheries needs full and complete implementation. The question then becomes, “How do we do that?” Fortunately, this session is not responsible for answering that question, and we can rely upon the remainder of the symposium to do so.

Angler Organizations Perspective

Mr. Patrick Murray, Communications Director, Coastal Conservation Association

On behalf of angler organizations, Mr. Murray began by stating that when recreational anglers are not taken seriously in the deliberative process, problems with fisheries and resource management begin. Mr. Murray definitely feels that there is inequality between how recreational and commercial fishermen are considered in the management process.

The concerns of recreational anglers have a huge bearing on fisheries management, such as getting net bans in place which have led to stocks such as red drum, rebounding. Another example of recreational anglers being left out of the management process is the shark fishery. This went from a minimal recreational fishery to an almost exclusive commercial fishery in just 20 years. The shark fishery was primarily catch and release with little impact to the resource in the 1960s and 1970s. By the 1980s, NMFS promoted commercial shark fishing as underutilized and considered a shark fishery management plan as unneeded. By 1989, there was a strong, directed commercial shark fishery. Shark management moved to NMFS, and despite the destructive commercial directed fishing, there was still no action. Fast forward that to 1996 and there were size/bag limits, and now in 2000 there is a 50% quota reduction and stringent management of the recreational fishery.

Recreational angler input is valuable because of its insight, altruism, and history. In the late 1970s, recreational anglers in Texas organized, concerned about red drum stocks. In 1977 the Gulf Coast Conservation Association (GCCA) was founded. Through recreational anglers' efforts, the Texas legislature banned monofilament gillnets, reduced bag/size limits, and helped to fund a red drum hatchery. Spirit, ethic, and altruism equal recreational fishermen. These qualities need to be kept in mind by managers. When recreational fishermen are ignored in the management process, problems occur.

In closing, Mr. Murray stressed the two key points of his message. The first is that many problems emerge because recreational anglers do not have adequate input; there must be a recreational balance in the management process. An example is that there are 27 licensed lobbyists for commercial fishermen at Congress while there are only five for recreational fishermen. The second point is that recreational anglers must organize and participate in the system. Lawsuits are filed, such as GCCA's gag grouper suit, because federal actions, such as bans, can be imposed arbitrarily. A lot of conservation issues get addressed because of recreational anglers input and involvement. Recreational fishermen need to enact solutions and be proactive and get a voice in the system, and it is the duty of fisheries managers to listen to them.

Charter/Party Boat Industry Perspective

Mr. Robert Fletcher, Executive Director, Sportfishing Association of California

On behalf of the charter fleet, Mr. Fletcher agreed with Mr. Dunnigan that it is difficult for the charter fleet to open up to the management process because this constituency has been historically independent and very committed to fishing as a livelihood. Although they don't tend to be involved with the formal process, the charter fleet talks all the time about regulations, particularly as "radio chat."

Mr. Fletcher believes that recreational anglers are starting to wake up along the West Coast and become involved. The recently passed Marine Life Management Act described by Ms. Wolf is really due to the efforts of recreational anglers. Management via fishery management plans is much more progressive than managing through the legislature.

There are more recreational boaters than there used to be, and once people begin boating, they increase their awareness of fishing issues. The other side of the coin with the increase in boaters is a proportional decrease in commercial vessels for hire. However, some commercial fishermen are starting to speak of the reality in fisheries and using recreational issues as a way to save and restore fisheries.

In addition to outreach and education, management needs adequate science. This is the biggest problem along the West Coast; there is not enough science, especially for species of recreational interest. Anglers must speak to Congress that funding is not adequate to manage these fisheries. For example, there has not been an adult groundfish stock assessment south of Point Conception since 1977. No science has been done in 23 years, yet recreational fishermen are being forced to live with reduced bag limits and seasonal and area closures with very little science. Transboundary stock assessments do not exist due to lack of coordination between the U.S. and Mexico. Why is there no process for joint U.S.-Mexico assessments/science when there is a lot of money devoted to transboundary U.S.-Canada assessments/science?

In closing, Mr. Fletcher stated that agencies need to find ways to get charter fleet folks out and involved in the process. At the same time, managers need to figure out how to incorporate anecdotal information into science and management. Never stop bringing new players into the process—only then can management be inclusive. Management needs to have good ideas and the broad support of recreational fishing constituents.

Panel II—Discussion

Dr. David Pierce, Massachusetts Division of Marine Fisheries, requested clarification of Dr. Matlock's statement about the precautionary approach—an ICES paper states the precautionary approach is a new international standard. Dr. Matlock responded that the precautionary approach is because of the Magnuson-Stevens definition of commercial versus recreational fishing. The precautionary approach would have a bigger impact on commercial fishermen rather than recreational fishermen because

you cannot have a commercial catch and release fishery. Dr. Pierce responded that the precautionary approach will have an impact on recreational fishermen too, as evidenced by the Mid-Atlantic Fishery Management Council.

Dr. David Dow, National Marine Fisheries Service, questioned Dr. Matlock on the precautionary approach. Since commercial and recreational fishing interests and environmental/animal rights organizations have different interpretations of the precautionary approach/principle and its implications than do fishery management scientists within NMFS (and probably elsewhere), is there common ground within the Magnuson-Stevens Act reauthorization that would be acceptable to all interest groups? Dr. Matlock responded that he cannot offer any other language and that Congress has already incorporated the precautionary approach in amendments of the Act. An example is the use of dynamite—NMFS had to develop a list of allowable gears. Items such as dynamite that are not on the list are not allowed, and this reflects a precautionary approach. Dr. Matlock offered that perhaps language could be added to the Findings section of the Magnuson-Stevens Act that would state that the precautionary approach be taken.

Mr. Bob Osborn, United Anglers of Southern California, stated that he was involved with the Pacific Fishery Management Council Plan Development Team for highly migratory species on the West Coast and that there was funding for economic and social studies of the commercial fishery. He asked the panel what could be done to get the funding so that needed work can be done? Mr. Fletcher answered that other entities also collect socio-economic information, such as the Pacific States Marine Fisheries Commission and the states. But that as an individual, he should speak to the NMFS Southwest Regional Office and his Congressional representatives.

Ms. Osborn followed with a question asking how the budgets are made for all the fishery management plan work that must be done. Dr. Matlock responded that, for NMFS, the budget is composed within the Department of Commerce in consultation with the National Oceanic and Atmospheric Administration (NOAA) and from there it goes to the Office of Management and Budget (OMB) for their review, and finally to Congress. Dr. Matlock added that the budget is prepared two years in advance (for instance, preparation of the 2002 budget began in 1999) within NOAA. Teams are made to develop initiatives and these initiatives are then passed through the system. Dr. Matlock further offered and encouraged that an individual can participate in the NOAA Strategic Plan process and to write Congress since that is the body that ultimately decides funding.

Dr. Mark Holliday, NMFS, commented on Mr. Osborn's questions and pointed out Brad Gentner of his staff, if Mr. Osborn or anyone else would like to discuss various socio-economic studies conducted by NMFS.

Dr. Donald Anderson asked Mr. Fletcher if he thought boat owners would accept no fishing/closures if the science was there and also about sea lion interactions. Mr. Fletcher responded that boat owners and anglers have already accepted closures on lesser science and are willing to accept whatever is brought on but they would accept measures better if the science was there. Mr. Fletcher further responded that recreational anglers are more willing to accept because they are not tied as closely to the resource as commercial fishermen are. As for sea lions, that would be another place and another time. Dr. Jim Murray, National Sea Grant Extension Program, added that recreational anglers have historically accepted regulations but they need to have input into the system.

Mr. Claude Bain, Virginia Marine Resources Commission, commented that the timing of regulations affect more than just the charter fleet—hotels, etc.—and if a season is closed and there is delay in notification, there are impacts on vacation plans, etc. The recreational fishing industry needs a more stable regulatory regime and not one that changes monthly. Regulations need to be more stable over a longer period of time so agencies can get the word out in sufficient time to lessen economic impacts. Dr. Matlock responded that Mr. Bain's comments are on target and that progress has been made on some species such as bluefin tuna, but that he agrees that people don't know changes in bag/size limits and while these need stability, they also must be within quota restrictions. Mr. Dunnigan stated that the Atlantic States Marine Fisheries Commission is working on a multiyear program to address the need for stability in regulations but cautioned that a multiyear system cannot be flexible and that fishermen must realize changes cannot be made during the time period. Mr. Bain added that even for law enforcement stability is needed. You do not want to disenfranchise the recreational community—keep it simple and recreational anglers will be supportive.

Mr. Don Bodenmiller, Oregon Department of Fish and Wildlife, stated that not everyone was happy with the status of cod, rockfish, and halibut management by the Pacific Fishery Management Council. Oregon, Washington and Northern California anglers are not happy with recent management actions. The Pacific halibut management problem is that the number of open fishing days off central Oregon has gone from over 80 days in 1992 to six days in 2000, and the belief that part of this problem was allocation decisions made by the Pacific Council that did not match the distribution with abundance.

Mr. Larry Simpson, Gulf States Marine Fisheries Commission, asked the panel whether economics alone should be enough to allocate resources to the recreational sector. Mr. Dunnigan responded that, in fisheries, values count and it is not just value in dollars—we must remember communities. Political decisions sometimes need to focus on values that are best for the United States. Mr. Mahood responded that there is less information on

recreational fishing economics than on commercial fishing but that we are moving in that direction. Mr. Mahood suggested a recreational fishing license. Since we don't know who/how many anglers are out there, we cannot put a dollar figure on it. Mr. Fletcher stated that the West Coast is in better shape about counting anglers but that value must consider coastal communities and their historic participation. Economics is important, but it cannot be the only element to allocate resources.

Dr. Murray asked how to get people involved in the management process. He suggested using new technologies such as distance learning centers and web sites and asked whether any agency is using these new technologies to bring in fishermen.

Mr. Mahood responded that yes, he believes that all the regional fishery management councils have a website and that at least the South Atlantic Fishery Management Council is hearing from all over the country on proposed measures and not just from its own region. Most councils have public affairs staff that handle this. Mr. Mahood added that ethnic groups such as Cubans and African Americans need to be brought into the system, but they just don't participate and he does not know why. Dr. Murray referred to a survey of seafood dealers that found that sector favored getting information from web-based sites. Ms. Wolf stated that constituent involvement is at the top of the state of California's list, and they are developing a website for the Marine Life Management Act and asked that names of contact people be provided so that agencies can direct the information flow.

Mr. Ray Bogan, United Boatmen, stated that constituency groups need to be prepared when going to meetings and they also must participate at the meetings. Mr. Bogan added that he agrees with Mr. Mahood's comment about minorities and lack of participation and that they are generally unheard from in the fisheries management process.

Panel III and Discussion—Recreational Fisheries Data and Statistics: How Can We Improve on the Current Programs?

Moderator
Dr. Mark Holliday, Chief, Fisheries Statistics and Economics Division, National Marine Fisheries Service

Rapporteur
Mr. Kirk Gillis, Fisheries Biologist, Fisheries Statistics and Economics Division, National Marine Fisheries Service

Federal Government Perspective

Dr. Lamarr B. Trott, Deputy Director, Office of Science and Technology, National Marine Fisheries Service

Dr. Trott discussed the Marine Recreational Fishery Statistics Survey (MRFSS) emphasizing how the MRFSS has and will continue to evolve to best meet the needs of management. In 1976, the passage of the Magnuson-Stevens Fishery Conservation Act (Act) mandated consideration of the impacts of marine recreational fishing. Data on commercial fisheries had been collected for many years, but prior to the Act, there was no continuous, systematic collection of marine recreational fisheries data. The Act provided new impetus to develop nationwide statistics for marine recreational fishing. In the mid-1970s, the NMFS conducted studies to determine the best methods for providing estimates of catch, effort, and participation. Based on that research, the NMFS began the comprehensive MRFSS in 1979. The MRFSS originally was designed to provide statistics for marine recreational fishing at the national and regional levels. Since its beginning, increased experience, funding, and staffing have allowed the steady evolution, improvement, and growth of the MRFSS to provide state level data and to support a wide array of management needs. The 22 years of comparable, time-series data allow managers to monitor changing trends and to evaluate the effectiveness of management.

The MRFSS consists of two complementary surveys that proved to be the most reliable methods for collecting effort and catch data—a telephone survey to determine the amount of recreational fishing effort (fishing trips) and a shore-side intercept survey of anglers for catch (number of fish caught, harvested, and released alive). Data from the two surveys are combined to produce estimates of total catch and catch-per-unit-of-effort by species. Over the years, the MRFSS team has made many improvements to the program. While needs seem to be unlimited, resources are finite. Therefore, items with the greatest overall benefit are prioritized.

Twenty-two years of experience has resulted in an extensive data quality control program. One of the most important components of this is well-trained personnel. After comprehensive training, performance is monitored with 10% call backs of field interviews to verify the data and

silent monitoring of 10% of all telephone interviews. To ensure accurate data, computer programs have been developed that prevent accidentally entering impossible or unrealistic data, and thousands of lines of data are visually inspected to ensure nothing has been overlooked. Years of statistical research has led to major improvements in the efficiency and accuracy of recreational fisheries estimation procedures. In 1995, the MRFSS team revised estimation procedures, which increased the accuracy of estimates. More recently, in 2000, a new method for estimating the number of for-hire fishing trips was implemented on the Gulf Coast. This represents a major improvement to the survey and has received tremendous support from the Gulf Coast charter fleet. It is hoped that the new method will be implemented nationwide by 2001.

With assistance and support from the American Sportfishing Association, a comprehensive national economics program was added in 1994. The year 2000 will complete the first round of these economic surveys, and NMFS will have a complete, national database to analyze the economic impact and value of marine recreational fisheries. This information helps managers understand the social and economic implications of their decisions and also provides a base of market information useful to industry. In addition, the NMFS Office of Science and Technology also conducts other socioeconomic research. Currently, a conjoint analysis survey of Northeast anglers' preferences for types of fishing trips and management options is being implemented. Also, two pilot studies to profile the tackle retailer and for-hire fishing industries have been completed.

Many of the improvements made to the MRFSS over the years have been made possible by increased funding. Federal funding increased in the 1990s and several states contribute funds and/or personnel. These additional funds allowed for greatly increased sample sizes. In the early 1980s, 72,000 field and 142,000 telephone interviews were completed annually. In 2000, it is expected that almost 150,000 field and over 250,000 phone interviews will be completed. This has greatly improved the precision and reliability of statistical estimates. In recent years, state-federal partnerships have also provided funding for studies to improve recreational statistics.

Three state-federal partnerships have developed in recent years that are helping to improve the MRFSS and recreational statistics. The Atlantic Coastal Cooperative Statistics Program and the Gulf and Pacific Fishery Information Networks strive to: 1) standardize and improve fisheries data; 2) increase funding and improve the quantity and quality of the data; 3) reduce duplication of effort and improve overall efficiency; 4) improve the public credibility of fisheries data; and 5) improve communication. The MRFSS is the primary recreational data component for each of these partnerships. The MRFSS team has worked with these partnerships to develop a comprehensive research agenda to improve the nation's primary

marine recreational fishing database. Due to time constraints, only a few potential improvements are discussed.

A sampling frame is simply a list from which a statistical sample is drawn. The better the frame, the better the statistical estimates. The MRFSS team has always been aware of the potential benefits of using state saltwater fishing licenses as a frame. State license frames may increase efficiency, but some operational difficulties must be ironed out for them to provide a useful sampling frame. State legislators would have to implement mandatory licenses in each state and resolve differences such as senior exemptions, minimum ages, etc. States would also have to be capable of providing up-to-date electronic copies of their license frames.

Another improvement being considered is to expand the area of coverage for the telephone survey. The current phone survey covers coastal counties only. This requires an adjustment factor to account for fishing effort from marine anglers who reside outside coastal counties. Expanding the dialing zone would improve all MRFSS estimates and also opens new doors for other meaningful research by providing a nationwide sampling frame. For example, little is known about the non-consumptive and existence values of living marine resources. Expanding the MRFSS dialing zone would provide the type of sample frame needed to study non-consumptive users of marine resources.

The fisheries economics program also intends to continue efforts to accurately profile various components of recreational fishing industries. If fishery managers are to fully consider the economic implications of their decisions, they need to have comprehensive profiles of these important industries.

MRFSS data has been available over the internet to both scientists and the public since August 1996 (http://www.st.nmfs.gov/st1/recreational/index.html). Data queries are user friendly and automate answers to common questions such as total U.S. recreational landings by major species groups and the number of marine anglers and trips by state. Some of the many additional data summaries being considered for addition to the MRFSS site are sample sizes, number of trips by target species, and disposition of the catch, such as voluntary or mandatory release.

In closing, Dr. Trott invited all attendees to visit the MRFSS booth and pick up a summary form describing the MRFSS research agenda and a ballot for indicating preferred items.

Interstate Marine Fisheries Commissions Perspective

Mr. Joseph Moran, Program Manager, Atlantic Coastal Cooperative Statistics Program, Atlantic States Marine Fisheries Commission

Representing the Atlantic States Marine Fisheries Commission (ASMFC) and the Atlantic Coastal Cooperative Statistical Program (ACCSP), Mr. Moran began by noting the importance of standardizing fisheries data. The ACCSP is one of three state-federal partnerships developing coast-wide data collection and management systems for fisheries data. On the Gulf and Pacific coasts they are called Fishery Information Networks. ACCSP partners include the Atlantic States Marine Fisheries Commission, the NMFS, Atlantic state agencies, fishery management councils, the District of Columbia Potomac River Fisheries Commission, and the U.S. Fish and Wildlife Service. These coast-wide programs have been a long time coming, and since the partners signed the Memorandum of Understanding in 1995, the ACCSP has made much progress. Each agency is fully involved and committed. However, it is particularly difficult to standardize fisheries data on the East Coast because it includes 23 state and federal partners involved in the collection of fisheries data, which is not limited to biological data. It involves social, economic, protected species, and other data modules, as well as the relationship between each module. It would be a much easier task to focus on one aspect or module, but the different data types are interrelated just like the ecosystem.

The ACCSP is organized as a consensus-based committee structure under a Coordinating Council. The Advisory Committee is comprised of commercial and recreational representatives from each of the 23 partners. The Coordinating Council decisions are based on input from the various technical committees, the opinions of the Industry Advisory Committee, and the recommendations of the Operations Committee. Catch and effort data are central elements to the structure of the ACCSP, but biological, social, economic, discard, protected species interactions, and quota monitoring are also important elements. Integrating each of the data modules is the goal, but it is dependent on funding.

The ACCSP is organizing a consistent data collection methodology, setting program standards for data elements and definitions, and generating standard reporting requirements. Quality control and assurance is a very important part of the process. Great effort is given to ensuring data is not only consistent but of excellent quality. The ACCSP strives to use and improve existing programs where possible and not re-invent the wheel. The MRFSS serves as the primary recreational data component and is supplemented with various state trip ticket, biological data collection, and other programs.

In addition to data collection, it is important to consider the people involved in providing the data. Why should they have to submit data to federal, state, council, township and others? The ACCSP seeks to decrease the burden to industry resulting from overlapping federal, state, and other data collection efforts. It is a matter of efficiency; reducing duplication makes it easier on the industry as well as the organizations collecting the

data. This is necessary because so far data collection is piecemeal and reactive, and ultimately, the best available data just isn't good enough sometimes. In the long term, the ACCSP may expand beyond just fisheries and standardize all living marine resource data. As more people migrate to the nation's coasts, the burden on all marine resources will also increase.

The ACCSP intends to maintain and enhance coordination with the two Fishery Information Networks and eventually work together to establish a national program. The ACCSP has coordinated with the GulfFIN to utilize their processes and jump start the ACCSP program. We continue to benefit from their experience and are beginning to work more closely with our FIN colleagues on the Pacific Coast.

The ACCSP has been successful at developing a basic module to achieve coordinated, consistent, and timely data. It is flexible and capable of meeting state and other partner needs. The partners agree to disagree, which supports diverse and innovative ideas. However, they need to do a better job of getting the word to "Joe Fisherman." They can and do communicate with the highly visible, involved, and affluent angler constituents, but need to do a better job communicating with the occasional angler and solicit their feedback. Private dock users, recreational shell fishing, addressing the issue of anglers selling their catch, and finding consistent and adequate funding are other areas they are working to improve. Tournaments are a large data source that should be made better use of.

Dr. Trott mentioned the methodological changes being implemented in the Gulf of Mexico to improve MRFSS catch and effort estimates for the for-hire sector. Preliminary results have been very positive and the ACCSP is currently in the middle of a for-hire pilot study on the Atlantic Coast. This study is examining the use of mandatory log book reporting for party and charter boats and results will be compared to both the traditional MRFSS method and the new MRFSS vessel directory method currently being implemented in the Gulf.

Some solutions to the problems noted are constant feedback from "Joe Fisherman," substantive pilot studies, a focused effort for consistent funding, and not shying away from accountability. Congress will not provide the money if the ACCSP cannot defend what they want to do with it as well as what they have gotten out of it.

Mr. Moran concluded by noting his personal opinion regarding the primary challenge facing marine fishery managers today. Management must be proactive and find a way to at least sustain fish stocks at current levels and improve them if possible. To do this, young and future anglers must be taught by example. The next generation needs to fully understand responsible angling and be taught conservation-based angling practices.

Interstate Marine Fisheries Commissions Perspective

Mr. Ronald R. Lukens,
Assistant Director,
Gulf States Marine
Fisheries Commission

Mr. Lukens began by stating that good data are the backbone of decision making. Unfortunately, good data are not always used properly due to other influences. However, without a solid backbone of good data, you can't even start to improve decisions. The presentation will cover how the Gulf States Marine Fisheries Commission (GSMFC) has addressed the issue of good data.

The GSMFC was established in 1949 by individual state and federal legislation through Public Law 8166 to do joint interstate and state-federal work. Through coordination with sister commissions, it is possible to address issues of national as well as regional scope. The GSMFC's mission is to develop and implement joint programs for fisheries research and management. In 1988, the GSMFC began discussions to improve fisheries data, because everyone felt that improved data was an important issue. In 1989, the GSMFC issued a policy directive to explore how the Commission could become more involved administering and coordinating state and federal joint activities to improve the collection and management of fishery data. This decision was based largely on the success of the Pacific Fishery Information Network, or PacFIN, and the Recreational Fisheries Information Network (RecFIN) on the Pacific Coast. Both of these programs are fishery-dependent data programs and are administered by the Pacific States Marine Fisheries Commission.

In addition to the aforementioned policy directive, in 1991 the interstate marine fishery commissions agreed to a position statement regarding data programs. The position statement emphasized a commitment to good data for fisheries, and specifically notes that the states should be given first priority regarding cooperation and partnership in any national and regional data collection and management programs. The policy directive and position statement resulted in the Gulf Fishery Information Network (GulfFIN), which is comprised of both recreational and commercial data, components known as RecFIN and ComFIN. In January of 1999, MRFSS intercept data began to be collected through the GSMFC. This was a full ten years after the policy directive, but proved to be worth the wait because so much of the ground work had been laid. Funding was made available through the GulfFIN line item in the NMFS budget, which specifically dedicated funds to help support state activities through the GSMFC.

In 1997, the GSMFC began a project in cooperation with the MRFSS and Commission member states. This project led to the change of methodology referenced by both of the previous speakers. The project is the Pilot Telephone Charter Boat Survey, which ran through 1999. Similar projects were conducted in cooperation with the NMFS in Maine and North Carolina. The Maine and North Carolina projects were at a smaller scale, and the Gulf project was implemented to test the methodology on a broader scale. It is based on establishing a database of for-hire vessels which

is used to call 10% of the vessel representatives (usually captains or owners). This phone survey collects information on vessel effort (trips) only, catch data is collected at the dock through the standard MRFSS methodology. The telephone survey of vessel operators and the standard MRFSS intercept survey are combined to produce harvest estimates. This has been a very successful cooperative effort. Recent analysis of the data collected through the pilot study indicated the estimates of the for-hire fishing effort in the Gulf of Mexico are more precise using the new methodology and also that the trends evidenced by those data are much more credible than what had been previously used. Because of the success of this cooperative effort, the NMFS recently announced that the new methodology would be the official survey methodology for the for-hire sector. In January of 2000, it was officially adopted by the MRFSS program.

Since the new telephone methodology relies on a list of for-hire fishing vessels in the Gulf of Mexico, it is important to say that the directory consists of about 3,000 for-hire vessels that range from small guide operations to charter boats. It is also important to note the importance of partnerships, team efforts and involving the constituency and user groups in the development process. This survey methodology will not work without the cooperation of the charter boat industry. Involving the captains and vessel owners has brought them into the process and will contribute to the long-term stability and success of sampling this particular mode. As a result, we will have better data to manage that important sector of the fishery.

In Joe Moran's presentation, he noted the importance of tournament fishing, night fishing, and private access fishing. These fishing activities are not sampled in the current survey methodology. Because they are not sampled in the field but may be contacted as part of the telephone survey, we have to find a way to account for them. Currently, it is assumed that catch and effort associated with those activities is the same as catch and effort associated with the activities that are sampled. This is a big assumption that may not be true. Most managers believe there are differences, but we don't know what those differences are. With the exception of some of the larger tournaments, like billfish tournaments, there is very little data associated with tournament fishing. These issues should be investigated to determine if differences do exist for these activities and to decide if a different approach is required to collect data from these activities.

Lastly, the issue of redistribution of sampling effort should be discussed. We would like to investigate the possibility of redistributing sampling effort to increase the probability of encountering managed fish species at the dock, while maintaining a valid statistical design. This could allow us to have more precise estimates of catch for use in the management process. Statisticians at NMFS have developed a sample allocation program to accomplish this, but we have not been able to conduct a pilot of that program to determine if it will accomplish the task. It is important to note

that if we do proceed with redistribution of sampling effort to improve estimates of managed species, we must also make sure that we maintain our base level of sampling across species, because we do not want to erode the time series. To accomplish this, we will need to increase the amount of sampling which would increase costs. We intend to do a pilot study to investigate what redistribution will do to the estimates as well as how much we would need to increase sample size and how much that would cost.

These are some of the things being done in the RecFIN program. I think the issues presented show that we still have important work to do but we are on the road to doing it right. Involving the states, using the interstate fishery commissions to coordinate and administer these programs with the NMFS has created a true partnership where everyone works together and brings their combined resources to bear. This is the first and most important step to doing it right. The structure of the FIN program (committees and workgroups) provides the venue for identifying issues, and the partnership improves the ability to find solutions to those issues.

Interstate Marine Fisheries Commissions Perspective

Mr. Randy Fisher, Executive Director, Pacific States Marine Fisheries Commission

Mr. Fisher opened with a brief background of the Pacific States Marine Fishery Commission's (PSMFC) involvement with data collection. The PSMFC commenced and coordinated the MRFSS program with the NMFS and the states of Oregon, Washington, and California in July of 1979. Like the other coastal statistics programs, the PSMFC uses MRFSS methodology, which is comprised of the field survey for catch data and the telephone survey for effort data. Periodically, the PSMFC adds questions to the base MRFSS to address issues such as marine mammal interceptions and additional demographic information on the fishermen themselves. The MRFSS system was designed as an overview to provide estimates of total catch by species. On the West Coast there are 3-5 million individuals taking about 8 million trips a year. Currently, about 35,000 individuals are interviewed. This represents about 0.4% of angler trips. The field survey costs approximately $918,000 and the phone survey costs approximately $240,000 dollars a year to operate. The goal is to interview 7,500 anglers in Washington, 5,500 in Oregon, 8,100 in Northern California, and 8,000 in Southern California. These states have been involved in marine recreational fishing sampling for decades. However, in the beginning state sampling was excluded from the overall sampling methods to ensure there wasn't duplication. In each of the three state programs, the primary target was salmon anglers. Over time these have evolved into more general ocean boat sampling projects but salmon is still the core of these survey programs. The state sampling programs generally employ a high sample size directed primarily at fish caught with little angler or biological data gathered. In 1993, the Recreational Fishing Information Network (RecFIN) was established. It was designed to provide a mecha-

nism for coordinating a committee to plan these programs. In 1996, the PSMFC established a centralized database. Recreational catch and effort from 1980 to the present is currently available on the RecFIN web site.

In the past year, RecFIN has worked with the PSMFC's Groundfish Management Team to provide them with recreational catch data. The problem is that the current MRFSS surveys are designed as an overview system. As such, the methods do not lend themselves easily to providing catch estimates for short time frames or for small areas. This is a real concern of the PSMFC. Only 3% of the telephone survey calls result in a fishing household. Sometimes, information is not available for council management purposes in specific areas or for specific species. This is important because the future will bring more allocation battles between commercial fishing gear types and also between commercial and recreational fishermen.

Catch data will be critical when individual fishing quotas (IFQs) become a reality for the commercials as well as individual recreational quotas. Add to this the legal requirements of the Sustainable Fisheries Act and the Endangered Species Act and it is easy to predict that every fish landed needs to be counted by species. The courts will eventually require us to do this. This is obviously a question of money, flexibility, and control. Biology and state legislation may not have the world's greatest marriage. It is naive to think that states can easily come up with the funding to do these kinds of programs.

Legislatures like hatcheries and cheap license fees. This is what pays for fish and wildlife agencies. To legislators, sampling and surveys are just not hot items. On the West Coast, the decline of groundfish fisheries exacerbates the funding dilemma due to loss of poundage fees that help pay for the operation of the fish and wildlife agencies. Increased federal presence in fisheries management due to the listing of species as threatened or endangered has caused states to start asking the question, why should we carry the burden of data management? If the feds are going to tell us what to do, they should pay. The requirements of the law and the federal presence has reduced the flexibility the states once enjoyed.

It is also important to remember that state license sales and fish ticket programs are state and not federal programs. The issue of control is also problematic. Is it a state, national, or management council program? Is it regional or should it all go to Washington, D.C.? We know the management issues are going to get more complicated and the states are going to be asked to provide more information in a shorter time frame. Currently, the West Coast commercial and recreational database is not designed well enough to meet future demands and needs. State fisheries agencies need to look at their commercial and recreational data gathering programs together and ask some questions. What information are they gathering by port, what information is missing, can one sampler do both commercial and recre-

ational data collection? This sounds easy because it is. It has not been done because most of the fishery data collection programs are organized separately within those agencies. It is also important for all the West Coast states to have a computerized licensing system. This would save a lot of money and time in the phone survey because calls could be limited to households where you know someone has purchased a license. That is a very big start.

In closing, the NMFS system needs to understand the needs of the fishery management councils. Simply put, they need flexibility, funding, and they need to have faith that someone else can do the job.

Regional Fishery Management Councils Perspective

Mr. Paul Dalzell, Staff Biologist, Western Pacific Fishery Management Council

Mr. Dalzell began by stating the solution to improving recreational data and statistics is simple. We know what needs to be done, but we need the resources (monetary and human) to do it. The Western Pacific area is a huge arc of islands extending from Micronesia to Polynesia. It is 1.5 million square nautical miles and represents half of all the U.S. Exclusive Economic Zone waters. It is geographically, economically, ecologically, culturally and politically diverse. For example, the Western Pacific ranges from the metropolitan areas of Hawaii and Guam to small remote islands where the populations live in a subsistence culture very similar to that of their ancestors. There are one state, two territories, one commonwealth, two island military bases, two island wildlife refuges, and one privately owned island that may also become a wildlife refuge. Many of the previous presenters have spoken about recreational anglers. We also have recreational anglers but we also have a very considerable spear fishing sport fishery. Not only in shallow waters but some also go offshore to fish attracting devices, island passes, and other blue water to spear large fish such as tunas and billfish. We also have recreational fishing with nets where a family picnics on one of the islands and collects fish with handlines while the women and children collect shellfish and even seaweed. To further complicate matters, we also have very substantial subsistence fisheries. Particularly in Hawaii, it is recognized that a large percentage of fishing effort is for subsistence.

The main focus of the Western Pacific Fishery Management Council (WPFMC) to improve recreational fishery data is to improve Hawaii's boat based and principally pelagic fishery. We realize that fishery management plans require data on catch and volume, fishery trends, allocation, value, regulatory, and other impacts. This is important because one of the things we are trying to communicate to the recreational fishing community is that they are extremely vulnerable by not having a data history as we have with commercial fisheries. This is particularly important in the areas of regulatory and other impacts, pollution, building of golf courses, sighting of new

industries, and other things that have potential impacts on recreational fisheries. We have excellent commercial data, but the same cannot be said for recreational fisheries.

In our area, there is an extremely high fishery per-capita consumption annually. Polynesia and Micronesia in general consume an average of 130 pounds of fish per person. Even urban Hawaii has an average of 42 pounds per person a year, which is more than double the U.S. national average. In the less urbanized areas, every person is a potential fisher and every village is a potential landing site. Hawaii has a large recreational community with at least 27 clubs (one being the second oldest saltwater angling club in the U.S.). There are 28 major tournaments and a significant charter fishing sector. Apart from Hawaii, we do not have a designated recreational fishery data collection system. We have good creel intercepts in the three territories (American Samoa, Guam, and Northern Mariana Islands) for commercial and what we would call recreational catch. In parts of Hawaii we have shoreline creel surveys, which are based on the Big Island and will be extended to parts of Maui. They will expand to include boat based intercepts as well as shoreline data. However, the important point is that the difference between commercial and recreational fishing is not clear. For example, in Hawaii, we have trouble determining what is a recreational catch. In a recent Hawaii survey, Marcia Hamilton classified landings as: 1) pure recreational (no sales); 2) expense only (sell part of catch to offset cost of hobby); 3) part-time commercial fishing; and 4) full-time commercial fishing. She found a strong statistical correlation within these four groups. This is a continual problem for the Western Pacific region.

The best estimate of our recreational catch is about six million pounds. This is using several sources of data and many assumptions. The data are confounded by the blurring of commercial and recreational fishing. With respect to Hawaii, the recreational catch in terms of volume is relatively low but when looked at in terms of per capita catch, Hawaii is at the top of the list with Louisiana at about four pounds per person per year. To calculate this, I used MRFSS data and divided total harvest by the state's population estimate. Once again, in Hawaii we have very good commercial catch data, but despite the importance of the recreational fishery we have very little data on recreational catch, effort, and trends. This is important because small boat leisure craft licensing has tripled from 1968 to 1998. This is probably in large part due to an increase in recreational fishing effort in Hawaii. Interestingly, boat licensing for commercial purposes is on the decline but commercial production continues to rise. This provides further evidence that many recreational anglers are selling their catch.

Because of these concerns, in 1998 and 1999 it was decided to form a task force under the chairmanship of Mr. Richard Shiroma to help guide the way to come to grips with recreational data in the West Pacific. For the

past six months, we have been trying to come to terms with this issue of the recreational data gap. Four basic recommendations came out of the task force to assist and guide recreational data gathering in the Western Pacific: 1) develop a metadata base for past recreational fishery surveys and summarize all the data contained in those surveys; 2) conduct a rapid assessment mail and phone survey to assess the total recreational fish catch in Hawaii (targeting principally pelagic fish); 3) have a comprehensive ongoing creel survey for Hawaii (which the state has already begun); and 4) have the MRFSS return to Hawaii so we can be reintegrated into the national system and allow meaningful cross state comparisons.

After re-emphasizing the importance of consistent and adequate funding to collect reliable recreational fisheries data, Mr. Dalzell closed by posing the question, "Is there anything to be gained by a paradigm shift in the definition of recreational and commercial fishing?"

Angler Organizations Perspective

Mr. Gil Radonski, Executive Director, Sport Fishing Institute (Retired), Fisheries Consultant

On behalf of angler organizations, Mr. Radonski began his presentation by saying that much of what he would present were the views of angling constituents as communicated to himself, Andy Loftus, and Dick Stone while under contract with the Atlantic Coastal Cooperative Statistics Program (ACCSP). They were contracted to conduct a series of roundtable discussions with angling constituents on the Atlantic Coast to get their input on marine recreational fishery data collection. The roundtables were conducted between January and April of 1999. The goals of the project were to develop interactive outreach between the ACCSP and the recreational community, to inform them about the ACCSP, and, most importantly, to get their opinions and involvement in it. A process was initiated through which the ACCSP can garner input and support for the ACCSP and develop a broader communication network to be used in the dynamic ACCSP development in the future. The purpose of the roundtables was not to provide ACCSP information directly to mass audiences or to sell the ACCSP program. Instead, the purpose was to develop an interactive posture with the recreational fishing community.

The structure of the roundtables was designed to be interactive. An overview of why they were there and how they got to the point of taking action to improve recreational data collection was presented. The theme of the roundtables was "better data means better management decisions." To provide a foundation for the discussions, the role of the Marine Recreational Fishery Statistics Survey (MRFSS), the Large Pelagic Survey (LPS), and the ACCSP were discussed in terms of how they work and what they are intended for. The focus of the roundtables was to obtain feedback concerning how the ACCSP can incorporate the angling community and its catch into their statistics. It was important that the angling community

be aware of how they fit into the big picture, and that they provide feedback on what they think is right about the ACCSP and what they think is not so right. We wanted to hear their ideas to improve the ACCSP and where we should go from here.

It was found that anglers wanted greater use of angler generated data such as club and tournament records, volunteer reporting, and other angler generated data. They felt that a lot of this type of anecdotal data existed and was not being used to lend credence to other data sets. Their idea was that the primary recreational data sources could be ground truthed using angler generated data. In their eyes, this would lend more credibility to the data being used by management. They also wanted to utilize state boat registrations to attempt to collect information from and identify the universe of boat anglers and develop a contact list for possible telephone interviews. Anglers were very concerned about increasing efforts to reach beach and private dock anglers and target specific fishing patterns such as night fishing. They wanted anglers to be intercepted where they frequent most, such as tackle shops and access roads to fishing areas. They were supportive of using new technologies such as aerial photography to double check effort estimates over a large geographic area. Some of these things are being done in some states or in some places, but the anglers that we talked to did not know a lot about this. They suggested computer kiosks at tackle shops and marinas with interactive programs to conduct surveys and collect additional information from anglers. They recommended the development of web pages to involve the public in self-reporting. A large concern was that there simply was not enough outreach. They felt the MRFSS and LPS are managed from the top down instead of the bottom up. They expressed a desire to be heard by management and praised the ACCSP for finally asking for their input opinions. They liked the idea of active outreach and wanted it to be part of future outreach efforts.

Anglers also expressed that the recreational community does not have a great deal of faith in the NMFS programs such as the MRFSS and LPS. Mr. Radonski expressed that he personally thought the MRFSS was an excellent program if the data are used in the manner in which it was intended to be used. There has been a lot of misuse of MRFSS data by state and federal agencies where the data have been used inappropriately for purposes other than that for which the data was intended. This has damaged the MRFSS image with the recreational community. Fixing this should be a priority and is an area where we need a lot more outreach to win back the confidence of the angling community.

The anglers wanted to use club networks within the states as a means of disseminating information as well as garnering input. Basically they are asking for more involvement and attention to finding an appropriate use of angler generated anecdotal data. They saw a need for timely feedback to the

recreational community in terms of survey findings. They are asked to provide the data but they don't hear anything about it. From their point of view, it seems as if the data go into a dark hole. They want systems set up where the information is reported back to them.

Many anglers also wanted to know why additional data are needed. They believe there is more than sufficient data for a lot of fisheries but management does not take action. Of particular concern was billfish. They expressed that management knew the problem existed long ago and had the data to take action, but nothing was done. To them, this contributes to loss of confidence and does little to convince them to participate in these programs. They also felt there was a need to outline (in layman's terms) what will be collected and how the data will be used in the management process. Anglers said they were not told enough about this when the programs started and feel that in many cases the data will be used to their detriment. Anglers also expressed a desire to vest more control over the surveys with the states (particularly the dockside interviews) because those closest to the fishery know more about what is going on. In all four roundtable discussions, anglers expressed having more faith in states rather than federal programs. There was a call for increased training for both dockside and telephone interviewers to improve the interpersonal skills of the people contacting the anglers. It was suggested that maybe the socio-cultural background of the interviewers should be matched with the area in which they are working.

In terms of other fisheries, in each roundtable the recommendation was made to bolster monitoring of commercial fisheries with a combination of logbooks and observer programs. Of course, this should be expected in a recreational forum.

It is interesting to note some of the things that were not heard at the roundtables. We did not hear any strong calls for the elimination of the MRFSS, but there were a number of calls for modifying it. It was even suggested that the name should be changed because it is a good program, but it has a bad image and probably needs to be resold. There were not any real questions or comments about conducting the telephone survey in coastal areas only. There were no calls to eliminate the survey in favor of a complete census. It was explained to them that a census would be so expensive it would be prohibitive.

What worked in the roundtable process? Simply talking and listening to the people was welcomed. They wanted to be part of the program. It was also important that the representatives conducting the roundtables (myself, Andy Loftus, and Dick Stone) were known and trusted by the recreational community. Informal settings and an informal approach to the roundtables was welcomed.

Mr. Radonski closed by stating that what he presented was not his opinion of what the anglers think, these were things that were expressed to

them by anglers and that they wanted them to carry the information back to the ACCSP. A full roundtable report has been completed and provided to the ACCSP with hopes that it will be made part of their program.

Charter/Party Boat Industry Perspective

Mr. Raymond Bogan, United Boatmen

Mr. Bogan began by stating that the primary goal of regulators should be to find ways to instill confidence in the data collection process and how it is incorporated into the management process. It seems that things have improved since years ago when those involved in the management process struggled to understand the data collection process, how it was incorporated into the management system, and concerns about the process went unheard. We feel as though, through things such as the ACCSP, a real outreach is being done by fisheries managers and through the legislature to try to bring the community into the process. This is the key to a successful management process. Management and data collection should be interactive. If we do move towards interactive data gathering, there will be an extraordinary surge in the confidence that anglers have in the system. Something as simple as the roundtable discussions just presented by Mr. Radonski have a large potential for instilling confidence. Anglers want to be involved, and being involved will increase confidence. There are some good examples of how interactive data collection has enhanced the experience for anglers participating in the process. A great deal has been learned from hook and release mortality studies and many of these rely on the direct participation of the angling community. Not only did we learn that the angling community can be a substantial contributor to research, but fisheries managers have learned that, in many cases, assumptions on release mortality rates have been exaggerated and some management decisions were based on those exaggerated mortality rates. These hook and release mortality studies indicate the importance of involving the angling community because for the first time managers had some real hard data rather than having to assume what the mortality rates were. Age-length frequency studies are another area in which the angling community could be successfully involved by providing fish and measurements to management. Involving anglers clearly can enhance the management system while also increasing confidence in the system. Another example is the archival tagging programs. This is an extraordinary program that has made an awful lot fishermen feel like they are part of the process.

The MRFSS is an interactive program in the sense that we have dockside interviews and telephone interviews with anglers. But there is a decent amount of concern with the MRFSS, particularly in regards to the geographical limitations of the MRFSS. In the for-hire industry, many customers are from urban areas. Unless they are caught in dockside intercepts, they are essentially left out of the MRFSS data collection system.

The party/charter boat industry is easy to deal with because they are easy to identify and generally limited to the port they sail from. They should be more involved with providing catch and landings data as well as migratory trends. A typical criticism and concern regarding the industry providing fishery dependent information is that it is anecdotal if not put into some kind of format and organized structure. This is where state and federal biologists could be of tremendous assistance. They can guide and cooperate with the party/charter boat industry to acquire data that can ultimately be put into the system. There are some stark examples of how beneficial this kind of cooperation *could* have been. Certainly the summer flounder management program would have benefitted greatly from some real-time data, and managers would have been in a much better position when making decisions regarding the recreational restrictions for summer flounder. Because the MRFSS program takes time to audit the data and make final estimates, it was not possible to incorporate that year's MRFSS data into the management decision. The fishery management council went to the table without the type of information that was really needed.

I have suggested the party/charter boat industry be allowed to get involved in obtaining some kinds of information, but I am in no way suggesting it should supercede or supplant the current programs being used. It should be a supplement to the information those programs collect because this would allow certain trends to be recognized more quickly or verified. For example, Capt. Tony DiLernia could tell us about an instance when there were questions about MRFSS estimates in regards to party/charter boat logbook data. Tony arranged to have someone audit both data sets and the result was that the logbook data were very close to MRFSS estimates for that year. Those of us who doubted that learned a great deal from the experience. A lot of times when the party/charter boat industry is confident they are right, we wind up being proven wrong. On the other hand, last year there was industry catch data that would have shown that the MRFSS estimates of summer flounder should have been looked at more carefully. An interactive process not only builds the confidence of the fishermen, but if we develop a credible system to use industry data, the managers will end up with more confidence in the data as well. In talking with Bob Zales, Member, Gulf of Mexico Fishery Management Council, I think that red snapper is another fishery that would have benefitted greatly from more incorporation of industry generated data. In regard to party/charter boat logbooks, many in the industry feel as though the data was collected but not utilized. For example, I tried to get some information in regards to highly migratory species and found that all the logbooks we had submitted for a two-year period were brought to NMFS but never put into the computer. We had to send a Sea Grant person to Massachusetts to put it into the computer, and it was then taken back out again. This is the type

of thing that undermines the willingness of industry to stand behind data collection programs.

Another thing that needs to be looked at more carefully is the economic impacts of regulations on the common person. We need to learn about the human resource. This is essential and it is something society owes to certain people. We need to look at the angler customer and how they are impacted by regulations. For example, I sometimes hear that the quest of recreational anglers is to look for larger trophy fish. In some fisheries that is correct, in others it is not accurate at all. An example is bluefin tuna, which to a large extent has been taken away from the recreational fishermen, and it is now only a large trophy fishery. And by the way, whether or not you want to, you pretty much have to sell the large bluefin tuna which effectively makes you a commercial fisherman. This has resulted in the entire group being disenfranchised from the recreational industry because of this arbitrary characterization. The bluefin fishery has been turned into a fishery that does not reflect the historical use of the resource.

One of the great things about interactive and interstate management is that the nuances of a given region or state can be adapted to while complying with conservation requirements and meeting conservation goals that are set forth in management plans. It is also important to better understand some of the people involved in the industry such as deck hands and tackle shop clerks. There is a lot of meaningful information that could be collected from these people.

We have talked about the sale of dolphin and other species in the Southeast and Gulf. It is common to hear that they can't be recreational, but the commercial sector says they can't be considered commercial. Somebody is going to have to decide where those folks go. Hopefully, they will not be eliminated or disenfranchised from the recreational sector. Another group that is completely ignored are those people with the lowest socioeconomic status. Those anglers that fish off of docks, banks, and other places tend to have different priorities than those who can afford an expensive boat or a boat trip. Some anglers can't afford a day on a party boat; and if they can, they can only afford it once or twice a year. For those anglers a quality fishing experience may be very different than for the rest of us, and it is unlikely they will understand or agree with the concept of catch-and-release fishing. The MRFSS is starting to collect more socioeconomic information with a survey that is about to be conducted. I hope that in the questions they are not leaning towards a particular conclusion such as catch and release is preferential. They need to collect information from all types of fishermen and learn about all of their needs.

To conclude, Mr. Bogan expressed the need for better historical perspectives of our fisheries. Management needs to define a criteria for how they decide what history is used in management decisions. Bluefin tuna is an example. It was a totally recreational fishery until the 1950s; today it is

no longer a recreational fishery. The managers have taken it for granted that it is a commercial fishery. Another example is scup, which is now 78% commercial and 22% recreational. This was once a predominantly recreational fishery. There has been a lot of progress by management to engender an open spirit that allows for interactive management and data collection, and I strongly hope that this trend continues.

Panel III—Discussion

Mr. Ron Lukens offered additional comments concerning what constitutes commercial or recreational fishing. To him it seems clear that if someone sells their catch they are commercial. Developing a threshold as suggested by Mr. Paul Dalzell is problematic but worth discussion. However, it may be easier to think about it on an individual trip basis; meaning that if an angler or for-hire vessel sells their catch from a trip, then that trip is considered commercial, not the angler or vessel. It is possible to partition trips in this manner, but the operators selling their catch should have the appropriate permits and licenses to do so. This is one way to deal with this problem without disenfranchising those people. In any case, it is important to send a clear message that if you call yourself a recreational fisherman all the time, then you are not supposed to be selling your catch.

Dr. Lamarr Trott offered additional comment on Mr. Dalzell's mention of subsistence and artisanal fisheries in the Western Pacific. Roughly 1/4 of the world's total catch is by artisanal fishermen. In these types of cultures, they do not understand catch and release. On a different note, Dr. Trott noted that there is a need for more trained stock assessment biologists and fishery economists. The NMFS just does not have enough of these people. To address this, the NMFS has established a fellowship program with Sea Grant to co-sponsor two graduate fellows in each field per year, up to a total of 16 fellows, who work in the NMFS Science Centers while in graduate school.

Mr. Paul Dalzell agreed with Dr. Trott that Pacific Islanders often do not understand catch and release fishing. In fact, they often regard it as playing with your food, which is not acceptable. They do understand the concept of fishing for recreation, but to them you would still take your catch home.

Mr. Gil Radonski commented that differentiating between commercial and recreational fishing is superfluous. It is ok to talk about it, but too difficult to quantify it. If we can identify who is selling their catch and when, then it might be possible. However, it is largely a cash crop and the people involved are unlikely to tell you they are doing it because they don't report it as income. There are probably more important things to discuss other than that definition.

Mr. Raymond Bogan agreed with Mr. Radonski that there are more important things to discuss, but the problem is that we do categorize fishing and these people get cast aside. It is problematic for these people to wake up one morning and find out they are no longer recreational but disenfranchised.

Mr. Ron Lukens followed up by agreeing that this is not an issue of such import that it needs to be solved immediately, but there are implications to data. In areas where recreational catch is sold in relatively large amounts, that catch could possibly be counted twice or not at all depending on how the sale takes place. It might not be the type of issue that can be easily resolved, but we can't forget about the data.

Dr. Mark Holliday provided additional comment on the issue of balancing requirements for information and resources necessary to pay for it. Dr. Holliday asked for a show of hands by people in the audience that think more money should be spent on fishery data collection. He noted that the response was nearly unanimous, but that this leads to the question of why this isn't happening and why more resources are not being devoted to it. He noted Mr. Fisher's earlier comments that these types of programs may not be particularly attractive to legislatures. If that is the circumstance, what do we do to address it?

Mr. Dick Stone, National Marine Manufacturers Association, suggested that cooperative efforts between the states, the federal government, and industry is the way to overcome funding problems. Programs such as the ACCSP and the FINs are the way to proceed. As Mr. Radonski pointed out, people are anxious to get behind these cooperative programs. Everyone working together will be the most effective way to impress upon Congress the need for better data and the need for the resources to accomplish that.

Mr. Gil Radonski followed up on Mr. Stone's comments by noting that the desire to be involved was something that really stood out at the ACCSP roundtable discussions. However, the organizations running the programs need to spend more time conducting outreach so that the recreational community can understand how they fit into the picture.

Dr. Mark Holliday noted that the NMFS spends $5–6 million a year on recreational data collection out of a budget of about $400 million. Mr. Larry Simpson, Gulf States Marine Fisheries Commission, has worked very hard and successfully to obtain $3–3.5 million for GulfFIN. The value of these resources is tremendous. What are some ideas or alternatives to address this at a wider scale?

Mr. Rich Hamilton, Marlin Club of San Diego, noted that he attended a meeting with NMFS and recreational anglers. As a result of the meeting, a marlin tournament was put together that was specifically designed around the data collection needs of the NMFS. Bridge logs, DNA sampling, satellite tagging, and regular tagging were conducted under the framework of a billfish tournament. From a cost standpoint, that is minimal for the

NMFS. It was done on a volunteer basis attracting recreational fishermen to collect scientific information for the NMFS. This is a prime example of something that does not cost a lot of money to do and can be implemented in a short time frame.

Mr. Randy Fisher commented on how many people believe that if they provide more information their fisheries allocation will be cut. On the West Coast, it is getting more difficult for surveyors to get on for-hire vessels because the feeling is that the more government knows, the more regulations they will have to deal with. In regards to the legislators, they may believe that in the information technology age, they should have answers instantaneously. We need to clearly communicate what is possible and what is not.

Mr. Raymond Bogan followed up by saying that it must be explained to the for-hire industry that without information, they will be weak because information is power. Ultimately, when there is discussion on the historical use and perspective of a fishery to be regulated, the question will be asked about what information do we have from years past. What information was provided that can be looked at in retrospect to help management make good decisions?

Mr. Gil Radonski noted that at the ACCSP roundtables the question of anglers providing data to their own detriment came up. This perception can be overcome through outreach that fully informs anglers about the total benefits of data collection. However, any outreach efforts to this end must be sensitive to the fact the angling community will be suspect about how the data will be used.

Mr. Bob Osborn, United Anglers of Southern California, noted the importance of conducting the MRFSS and other data collection activities but is concerned that there are groups of anglers that may not be adequately represented in those types of programs. It would probably be very beneficial for these programs to go to the local area and seek out the organizations that are knowledgeable about the local fishery and anglers. This is already done for commercial fishermen but more attention should be paid to the recreational groups.

Mr. Ron Lukens responded to Mr. Osborn's comments by agreeing and suggesting that this type of activity could have positive implications for filling some of the data gaps in particular fisheries such as the striped bass and night fisheries in the Gulf of Mexico.

Dr. Bob Ditton, Texas A&M University, responded to Dr. Holliday's earlier question concerning why more isn't being invested in recreational fishery data collection and other issues. He noted that non-governmental organizations have spent lots of time in allocation battles, but haven't shown up at meetings and have not argued in support of research agendas. In regards to many in the angling community believing more data will lead to more regulations, they should realize that the commercial fishing indus-

try does not want to see angling data improved either because information is power. While many in the recreational community have supported research and data, others have opposed it. It is also important for the anglers to have a basic understanding of probability samples. A common complaint about the MRFSS is when an angler says, "I fish all the time and I have never been surveyed, so how can the survey be good?" It may not be easy, but somehow we need to explain probability sampling to anglers. In regards to feedback to anglers, this is definitely a problem. The web is one potential solution but there are others. In Texas, survey participants receive an executive summary before reading the results in the paper. Another problem may be that many in the angling community assume the government will not make management decisions without sufficient data. As a final comment, we all need to understand that you just can't separate the survey from the image of the agency. What people know and think about an agency will affect support for data collection. At Texas Parks and Wildlife (TPWD), they go out of their way to ask constituents how TPWD is doing. They want to understand how they are perceived so they can address problem areas.

Mr. Gil Radonski agreed with Dr. Ditton's comment about information being power. To illustrate, he noted that North Carolina has been fighting for a marine fishing license for several years. Although the idea receives much support from anglers, it is being fought by the commercial fishing industry because they recognize that information is power.

Mr. Mike Murphy, National Marine Sanctuary Program, commented that many are distrustful of NMFS science and make claims of "we need better science." However, there is a big difference between science that does not have sufficient data to make definitive conclusions (what NMFS is up against) versus science that is done poorly (often the public perception because of the latter). Industry and government need to do a better job of educating their constituents about this important distinction.

Mr. Don Bodenmiller, Oregon Department of Fish and Wildlife, asked the panel if there were any studies being done to examine the accuracy of the MRFSS. He stated that for Oregon, MRFSS estimates are consistently 2–3 times higher for ocean boats than a state-run survey of ocean boats. This raises the concern of what that might mean for allocation and other management issues.

Dr. Mark Holliday responded by saying that there have been many MRFSS validation studies including review by an independent panel of statisticians and survey design experts. Although he is surprised by the low Oregon estimates, the MRFSS program is very concerned with the different results from the two surveys and is participating in a Pacific RecFIN review panel to investigate. Although the MRFSS program has been proven to be sound, it does have its weak points as does any survey (state or federal). The

MRFSS program is committed to providing managers with the best possible data.

Mr. Raymond Bogan made the distinction that the Large Pelagic Survey (LPS) and the MRFSS are two different programs that utilize different methodologies. There is a huge difference between the two and it is important that the angling community understand those differences.

Dr. Mark Holliday followed up by clarifying that the LPS and MRFSS use different methodologies for a reason. Highly migratory species (HMS) are often a pulse fishery that show up for a short time and then leave. Effort directed at those species is usually from a limited number of recreational ports where offshore charters operate or that have private boat access with reasonable travel time to offshore fishing grounds. These conditions make the MRFSS methodology inappropriate. Therefore, the LPS methodology was designed to address those special conditions and is the primary data source for HMS management.

Mr. Ron Lukens responded to Mr. Bodenmiller's question by explaining that the cooperative effort between the GSMFC, member states and the NMFS to pilot a new methodology for estimating charter fishing effort is an example of a study being conducted to find statistically valid ways to improve the overall MRFSS methodology.

Mr. Gil Radonski noted that the MRFSS and the state of Oregon should make every effort to clear up the issue of differing estimates before too much damage is done.

Dr. David Dow, NMFS Northeast Fisheries Science Center, noted that there is a difference between good science and advocacy. He then asked the panel why the commercial sector seems to be better at advocacy than the recreational sector.

Mr. Raymond Bogan responded to Mr. Dow's question by stating that prior to the last few years, there has been a dearth of people (federal, state, industry, and anglers themselves) interested in understanding the importance of the recreational sector. The angling community is just now getting the picture as is evidenced at this meeting.

Mr. Gil Radonski expanded on Mr. Bogan's comments by pointing out that the commercial sector is much better funded and has the organization and resources to conduct their own science. On the recreational side, many may feel that the excise tax for conservation is enough and they do not understand why they should put more into advocacy.

Mr. Anthony Fagan, California 4H Sport Fishing Program, noted that certain ethnic groups don't like the "big brother" attitude and know little to nothing about fisheries data or why it is important. He then asked the panel if they think these minorities may feel distrustful.

Mr. Gil Radonski responded by saying that many anglers are concerned about this and that the NMFS should look into sensitivity training for their interviewers.

Dr. Mark Holliday followed up by clarifying that MRFSS field interviewers do receive substantial training on how to interact with the anglers they intercept. He also noted that interviewers are hired from within the communities where they will work.

Mr. Richard Shiroma, Chairman, Recreational Fisheries Task Force, Western Pacific Fishery Management Council, commented that although Oregon may have a problem with some aspects of the MRFSS, they would be happy to have the MRFSS return to Hawaii.

Opening Presentation—Growth, Demographics, and Values of the Marine Angling Community in the 21st Century

Tuesday, June 27, 2000

Speaker
Dr. Bob Ditton, Texas A&M University

Dr. Bob Ditton began his presentation by noting that his views were based in part on science and in part on guess work, that the focus of his presentation would be on the 27% of anglers 16 years and over who fished in saltwater in 1996, and what this group will look like in 2030 and the influences that will shape their behavior.

Dr. Ditton cited changing demographic trends as a significant basis for his projections. The aging of the U.S. population, increases in minority populations, growth in non-traditional family units, increased competition for leisure time and discretionary dollars, and further concentration of the population in metropolitan areas all represent negative influences on saltwater angling participation and recruitment of new anglers. Ironically, individuals in their retirement years fish less than anticipated. Only 7% of 55- to 64-year-olds participate; and after age 64, participation drops to 3%.

By the year 2030, the U.S. population is projected to grow 29% over 1990. This will affect fishing participation since minority populations, which historically have fished less, will comprise a larger percent of the total population. Dr. Ditton pointed out that activities that fail to keep pace with population growth often fall behind as a public priority. By 2030 he projected more support for environmental protection issues, non-consumptive use of natural resources, subsistence uses, animal welfare concerns, and less support for "sport" fisheries, fishing tournaments, catch and release fishing, and trophy fishing. Another constraint will be a trend in government toward environmental super-agencies that could overshadow recreational fishing interests. Dr. Ditton also predicted that future saltwater anglers will be less educated overall and have less disposable income. They will be less informed about fishing issues, further removed from the management process, and less supportive of management agencies. In addition, anglers will require lower use and access fees because of their lower financial means.

In order to address these trends, management agencies and advocacy organizations will need to better understand differences in culturally based values among anglers and provide more attention to angler mentorship, create interventions that work, pay greater attention to constraints by group, focus beyond Anglo males, pursue research on potential new growth segments, improve education and outreach efforts, and increase the emphasis on urban fishing programs.

Panel IV and Discussion—Exploring New Markets, Opportunities, and Expectations

Moderator
Mr. Rollie Barnaby, New Hampshire Sea Grant Extension Program

Rapporteur
Ms. Leigh Taylor Johnson, California Sea Grant Extension Program

Retaining and Increasing Public Interest and Participation in Fishing, Boating, and Stewardship

Ms. Kristen P. LaVine, Program Manager, Recreational Boating & Fishing Foundation

The Recreational Boating and Fishing Foundation (RBFF) wants to increase participation because fishing and boating are important to the national quality of life, the economy, and the stewardship of aquatic resources.

RBFF has created stakeholder task forces, with each developing an action agenda and objectives. There is a national overlay plan, with products that can be tailored to local areas. The task forces choose their objectives, educate stakeholders and improve access to fishing. The objectives are based on research and evaluated. The approach is matched to opportunity and significant resources are devoted to implementation.

RBFF is cooperating with the National Shooting Sports Foundation to conduct target-market research to determine which methods resonate with different groups, use the best practices in education, and create a database of educational resources.

There are three objectives to the national campaign: 1) to "brand" fishing and boating and inspire people to participate; 2) to make it a national movement and synergize all resources and efforts; and 3) to overcome constraints and barriers for people who want to participate.

Phase one of the campaign surveyed the fishing experiences of Americans and found that: 12% never fish, 58% fish occasionally, and 30% are avid fishers.

RBFF wanted to focus their campaign on the "occasional fisherman" (someone who has fished in past, but not recently), but there were too many people in that group. They narrowed the focus to the 24 million Americans who own a fishing rod but have not fished in the past year. These are mostly fathers with children and ethnically and demographically diverse heads of households residing in urban and suburban areas. They learned that a child's request to fish is the most powerful inspiration. The child might be a member of the man's extended family, e.g., grandchild, nephew, or niece. A campaign theme was developed, "Time spent on the water connects people."

In phase two, they refined the target audience into groups based on low rates of participation, high population growth potential, the likelihood to change, receptivity to the campaign message, and the potential to co-market with other groups. Increasing the numbers of anglers and boaters requires a total community effort that includes all stakeholders, each of whom will bring their unique strengths to the campaign.

Defining "Quality" Angling: Can It Be Done, and Why Does It Matter?

Mr. Doug Olander, Editor-in-Chief, Sport Fishing Magazine

Mr. Doug Olander cited a survey by the International Association of Fish and Wildlife Agencies, entitled "The Future of Fishing in the U.S." It found that fishermen go fishing for relaxation and catching fish is not important. One-third of the respondents go fishing to be with family and friends, 13% to be close to nature, and 7% fished for sport. Does this mean we don't have to worry about fishery resource conservation? Resources are threatened by pollution and overfishing. There is a concern that lack of recreational fishermen interested in catching fish will mean that managers will not manage for sport interests.

Mr. Olander is skeptical about the study results and doesn't agree with the definition of "active angler" as one who fishes once in two years. He thinks the study should have focused on "real fishermen" who should be defined as people who fish every few weeks.

He thinks active anglers will continue fishing but with lower expectations. Most active anglers want to enjoy the excitement of catching, though they don't necessarily need to keep their catch. Mr. Olander defined quality fishing as "the reasonable expectation of catching (or at least hooking) fish."

Wherever fisheries have recovered, the number of anglers has increased. Examples are Texas bays where redfish populations returned, Southern California's surging, post-gillnet white seabass and halibut fisheries, and Florida's improving seatrout numbers.

A big bluefin tuna run off North Carolina in January a few years ago brought an influx of boats and anglers. Hotels reopened and the economy received a boost. The people said they would not have come if they didn't expect to catch fish, especially in January. If you take away the chance to catch fish, you lose most of your audience, despite survey results.

From 1982 to 1998 striped bass populations rebounded and sport fishers returned in larger numbers. If we let gamefish programs atrophy, all the children's education programs in the world won't help.

Making Room for Women: Move Over, Guys!

Ms. Betty Bauman, Director, Ladies, Let's Go Fishing!

Ms. Betty Bauman learned to fish as a child with her dad showing her how to fish with a tree branch. She now has the opportunity to present fishing to women, who are among the untapped potential market segments called "other non-traditional anglers" (ONTAs). Women's discretionary income has increased, and there has been an increase

of women as heads of single parent households. Although women make up more than 50% of the adult population, they comprise less than 1/3 of the nation's anglers, but female participation in fishing is increasing faster than male participation.

To reach out to ONTAs, you must first identify the market you want to reach and identify the desires and barriers between ONTAs and fishing. Then you need to create a program to break those barriers, implement the program, and then evaluate it for effectiveness.

There are several things that discourage women from fishing. Husbands and boyfriends might say fishing is for guys and won't take ladies fishing with them. Women may feel like an alien, they may lack knowledge and confidence in their fishing skills, they may be unable to launch or drive a boat. Women may say men yell too much, which is an important factor discouraging women from learning to fish. Women can be encouraged to try fishing by promoting it as relaxation time away from their house or job, and by promoting the excitement one feels when landing a fish.

In its fourth year, the Ladies, Let's Go Fishing! campaign had 1,400 participants, hundreds of partners and donors, and gave five seminars, including one in Puerto Rico, and three mini-seminars. Promotional efforts garnered 17 million media exposures. They had participation from 22 states and two foreign countries.

The pilot program provided a unique research opportunity to study women ranging from 22 to 70 years old, with the highest concentration in the 40-55 year range; 60% were married with children; 71% had fishing equipment in their household but did not know how to use it; 2/3 owned boats; and 90% rated their fishing skills as novice-average. Participants included mother-daughter teams and sisters. Their incomes ranged from less than $20,000 to more than $300,000. The media campaign stepped outside the recreational fishing industry, so they were not "preaching to the choir."

Participants were taught the basics: baiting, casting, reeling in; and then went out on a boat with live bait. Organizers expect the sport to increase in popularity because the participants are telling their friends about fishing.

Organizers found that point of purchase advertising and in-store seminars with social aspects, such as wine and cheese, were effective tools to reach potential female fishers.

Another aspect of the program that was popular with women was that the trainers adopted a non-threatening, "ask me how" attitude. Often women are either served after men or ignored altogether.

There are things retail suppliers can do to encourage women to fish, such as providing usage instructions on or inside product packages. Fishing supply store clerks can encourage novice female anglers who enter their stores by not overlooking them and offering advice for their purchases. Another tactic to attracting women to fishing would be to show in-store

how-to videos. Other ideas might be generated by viewing the sport through the eyes of a beginner.

The Ladies, Let's Go Fishing! program hopes to develop more funding to train others to offer this program to women in more areas. Information is located on the web site at http://www.ladiesletsgofishing.com.

Reaching Out to Other Non-Traditional Participants

Mr. John C. Bollinger, Deputy Executive Director, Paralyzed Veterans of America (PVA)

This session focused on people with disabilities as a market for sport fishing. Sports and recreation are important to disabled people, especially those who are reentering the mainstream of life and work after a disabling incident. There are 265 million Americans, 35 million of whom are anglers. Almost 20% of Americans have some form of disability; and among them, there are only two million anglers. That's a little more than 3% of the angler population, and it is largely an untapped market. Americans with disabilities have $80 billion of discretionary income and continue to increase spending on travel and recreation. It is a lucrative market opportunity for the recreational fishing industry. If you can serve some part of that market more effectively, you will have a loyal and lucrative customer base.

There are some inaccurate stereotypes of people with disabilities to be overcome. The range of personalities among the disabled reflects those in the general population. The disabled don't "break" easily, they're not all heroes or inspiring, and they don't all need a pat on head when they catch a fish.

So, how do you tap this market? There should be a natural inclusion of people with disabilities in sport fishing. People with disabilities have largely been unaware of saltwater sport fishing opportunities. The recreational fishing industry needs to reach out to them. People with disabilities have the same needs and patterns of behavior as the larger population. The industry needs to include disabled anglers in marketing campaigns. Disabled anglers may need special equipment, and the industry could help here by doing more research and development on how to manufacture special equipment, for example, devices to assist people who have a problem gripping a fishing rod. Many major corporations have had aggressive outreach to attract disabled employees and customers, and it's reflected in their bottom line.

Universal design benefits everyone. Better access for people with disabilities means better access for everyone else, too, especially as the population ages. The PVA Access Board has proposed a rule to make new construction more usable by people with disabilities and to alter existing facilities so they are more accessible. PVA wants to help with this task. It has 15 chapters that have coastal access sports and recreation programs. PVA's national architectural program works to develop accessible fishing facilities, ramps, and docks.

Coastal Urban Fishing: An Expanding Opportunity?

Capt. Tony DiLernia, President, Rocket Charters

Different groups of anglers have different needs. For example, some recreational anglers prefer to catch many small fish, while others want to catch a trophy fish, like a giant bluefin tuna. Anglers select the boats that will fill their needs.

Capt. DiLernia markets to stockbrokers and other Manhattan businessmen. When the stock market crashed in 1987, his market changed. People still wanted to fish but couldn't afford to take a day off to go fishing. He got rid of his large charter boat and went to a small boat that he docks at downtown Manhattan. He designed a trip that starts at 5 p.m. with the marketing concept that 15 minutes after you leave your desk, you can be fishing. There is a locker room at the dock, so customers can change out of their business attire, travel 2-3 minutes from the dock and begin fishing under the Brooklyn Bridge. Usually, his customers have caught their first striped bass within the first 15 minutes of fishing.

His customers want affordable fishing on Monday through Thursday evenings. He has modified his boat to accommodate people with disabilities, who are a good target market. Rocket Charters promotes morning trips to include disabled people, a time when it's less busy. Capt. DiLernia can only take six passengers per trip, so it is difficult to accommodate wheelchairs when they are busy. Each disabled passenger generally has an "attendant" who is a fishing buddy.

Many major U.S. cities are built around natural harbors with deep water access. They also hold fish. Capt. DiLernia had to educate the local police precinct that it is legal to fish in the harbor at Manhattan. As urban waterfronts are being revitalized, parks and promenades are being built and fishing facilities can also be put in.

Recruiting New Marine Anglers: What Works and What Doesn't?

Mr. Rob Southwick, President, Southwick Associates

Our goal, as a community, is to help people become life-long anglers. To do so, we must understand what encourages current anglers to fish, the benefits they receive from fishing, and how we can help people understand the benefits of fishing.

Fishing is a product. Like any product, it provides benefits to the consumer. For fishing, the benefits include fun, relaxation, a challenge, a great way to spend the day with your family or friends, and the thrill of catching a fish. The benefits vary depending on the individual. We need to market angling as providing these benefits. One does not fish for the sake of fishing, one fishes for the benefits fishing provides.

Dollar cost issues are minimal for beginning anglers. The biggest "costs" keeping people away from fishing are non-monetary: time, distance, and not knowing what to do are examples of the non-monetary roadblocks to fishing. We need to help people overcome these roadblocks.

Fishing competes with other forms of recreation. People say they are too busy, that there is not enough time to fish. Yet most people do take

time for some form of recreation. The truth is that fishing is losing anglers to competing recreational activities. People will spend their limited free time in activities that they know will provide the benefits they seek—relaxation, quality time with family, a challenge, etc. It is up to us to communicate to the public the benefits derived from fishing. We must educate people on how and where to fish so they can achieve these benefits. Once we are successful, people will assign a higher priority to fishing, and people will be more likely to select fishing over other competing activities.

More people will fish if it is convenient. If you can only allocate three hours for your recreation time, why would you select an activity that requires two hours of drive time? We must take fishing to the masses. Where's the best place to offer fishing? What should be offered there? This speaks loudly towards intensive management of urban fisheries. Know your local market (local anglers), their fishing preferences, and adapt your efforts in that direction.

Traditional marketing methods (derbies and contests) don't work well in many cases. A derby is a once a year event. Hold derbies four or more times a year to provide kids with the repetition necessary to learn any activity. Don't hold a contest requiring winners to catch a fish. Contests are intimidating to novices and will keep them away. Promote your derby as an opportunity where everyone can win via raffles, etc. Promote the fact that everyone is welcome—especially first time anglers. Provide instruction and mentors at the derby. Tell kids where to fish and where they can borrow equipment to hone their newly learned fishing skills. Encourage them to teach their parents, family and friends to fish. Follow this advice and you will recruit many more anglers.

Fishing partners are essential because most people won't be successful on their own. Look for people with the same goals you have (i.e., to reach children). This would include Rotary clubs whose mission is to help youth and the local community. Also, don't forget companies that focus their advertising on youth and families. Partners like these may have financial and manpower resources you don't and may be willing to partner with your youth fishing programs.

Don't forget to evaluate the results of your derby or contest. Are you reaching first time anglers? How can you do better? Over time, are the people you've reached continuing to fish on their own? Why or why not? If you are serious and diligent in your evaluations, you will greatly increase your long-term success.

Panel IV Discussion

Dr. Bob Shipp, Gulf of Mexico Fishery Management Council: Do you have statistics on readers of Sport Fishing Magazine who would like to be serious saltwater fishermen but live in the Midwest?

Mr. Doug Olander: We don't have those statistics, but most of our readers are experienced anglers. Magazines geared toward novices should be considering the inland market potential for saltwater sport fishing.

Mr. Rob Kramer, State of Florida: I run a marine outreach and education program, and I am concerned about the RBFF and its apparent focus on the freshwater side of things. The underlying theme of habitat protection and stewardship is apparently being diluted.

Ms. Kristen LaVine, RBFF: Our efforts are not trying to emphasize freshwater or saltwater fishing. Our task forces have representatives of both. We will not target big, fast, and expensive boats so as not to intimidate potential anglers and boaters. All of our efforts will pertain to a theme that includes participation and stewardship.

Mr. Rob Kramer: Are there any documents that could be made available to the states?

Ms. Kristen LaVine: Yes, a report will be available in July on target markets and barriers to participation.

Mr. Bob Miles, International Association of Fish and Wildlife Agencies: We conducted a survey to learn how to retain anglers, bring former anglers back and recruit new anglers.

Dr. David Dow, NMFS, Northeast Fisheries Science Center: I agree that urban fishing should be encouraged. For sport fish at the top of the food chain that are contaminated with PCBs and mercury, does this pose a problem for people who want to eat fish?

Capt. Tony DiLernia: I advise my anglers of the health advisories. More than 99% of the catch on my boat is released. I don't encourage keeping fish because it impacts the population of fish available for future trips, but I do eat fish.

Ms. Bobbi Walker, Department of Commerce, Marine Fisheries Advisory Council: Is the experience different for a private recreational fisherman versus a charter boat passenger?

Capt. Tony DiLernia: It depends on how you define satisfaction. Some private anglers include the preparation of their boats for the fishing season as important as locating fish to their level of satisfaction. On charter boats, the catching of fish is more important because they don't experience the benefits of keeping them.

Mr. Jon Lucy, Virginia Sea Grant Advisory Program: Do you find that catch and release practice and willingness to participate in it is any different for the six-pack charter customer versus the party boat customer? Do women take catch and release to heart more quickly than men?

Ms. Betty Bauman: Women are receptive to conservation methods that are taught in our seminars, including catch and release. They often want to influence others, such as their families and peer groups, to catch and release.

Capt. Tony DiLernia: On a slow night without a hot bite, they tag fish and release them. People anticipate getting the tag returns. People on charter boats are more likely to engage in catch and release than people on head boats. This goes back to their fishing motivation. Head boat customers often want to consume the fish; charter boat customers less so.

Mr. Jon Lucy: Government and non-governmental organizations promote catch and release. Do you think it is likely to hurt the head boat business?

Capt. Tony DiLernia: Head boat catch and release works to a limited degree. Head boats by day often make striped bass trips in the evening. Angling participation in evening trips is lower than on day trips. Head boats target summer flounder, scup, bluefish; it all comes back to target populations.

Ms. Betty Bauman: Some minorities are less adaptable to catch and release because they tend to be meat fishermen. They raise the concept of catching enough for dinner and releasing the rest. We need to determine attitudes of women on trips following seminars to see if enthusiasm continues. We have found that some compete and do well in tournaments after seminars but need to keep a social network going via repeat communication and referral to conservation organizations and fishing clubs.

Mr. Bert Kaplan, American Sportfishing Association: We would like to bring all education efforts together instead of the current shotgun approach. Do sportfishing people take kids out fishing? We would need help putting a program together. We could start with kids ages 9-12.

Mr. Rob Kramer: It sounds like there is a lot of help and chance for partnerships. We want to work with other programs; your approach is smart. Each program has limitations, and we can do more as partners than alone. We could keep kids hooked on fishing, not drugs.

Mr. Bob Zales, Member, Gulf Fishery Management Council: With different bag limits for private recreational fishing and for-hire fishing, is that creating a conflict between private recreational fishermen and for-hire fishermen?

Capt. Tony DiLernia: Presently, there is discussion about different bag limits, but I don't know of any other state with this situation. In New York they are less concerned with bringing so many fish home.

Mr. Ray Bogan, United Boatmen: People's desire to take fish home depends on the fishery.

Mr. Gregg Weatherby, UFA Conservation Foundation: Our purpose is to enhance communication among user groups. Reports in the press indicate that groups have difficulty reaching consensus on management of certain species. Can you comment on whether this is detrimental to fishing overall, the effect it has on the fishing community and how managers see us?

Mr. Doug Olander: No other issue has so interested and divided the sport fish community at its highest level. We avoided taking a stand for many reasons. For example, any solution is better than the status quo on longlining problems. There is still too much politics, so taking a stand would be counter-productive.

Panel V and Discussion—Angling Practices and Environmental Manipulation: How Much Effect on the Resources and Fisheries?

Moderator
Mr. James Bahen, Fisheries Extension Agent, North Carolina Sea Grant College Program

Rapporteur
Dr. Judy Lemus, Marine Advisory Services Leader, University of Southern California Sea Grant Program

Catch and Release: What's the Payoff for Fish and Anglers?

Mr. Jon Lucy, Virginia Sea Grant Advisory Program

Mr. Lucy started out by stating that, "You can't have catch and release if you don't have the catch." Recreational fishers need to work toward the goal of maintaining fish stocks to maintain catch. There are some differences between freshwater and marine fisheries regarding catch-and-release (C/R) programs. First, while there are quantifiable results in freshwater fisheries, more complications exist in saltwater fisheries. For example, marine fisheries don't have conventional boundaries. Also, in marine environments fish stocks are shared between commercial and recreational fisheries, and commercial fisheries exert a far greater impact than recreational fisheries. This increased impact of commercial fisheries could negate the beneficial effects of C/R programs. In addition, there is a lack of consensus among managers about the role and effectiveness of C/R among marine fisheries. Another complication is that C/R could mean different things among different anglers. Culture, economic stability, and involvement with organizations are variables that could effect angler participation as well.

There are a number of benefits of C/R to fisheries. These include new or improved information on fish stocks from tag/release programs, increased motivation for anglers to better handle the fish that they catch, and evidence of rebound of certain fisheries. One noteworthy example is that of the Atlantic striped bass fishery. A rebound in this fishery and uniform coastwide management has converted many anglers into believers of C/R.

There are also some non-beneficial impacts. Chiefly, not all fish survive C/R and the use of J hooks increases post-release mortality. However, post-release survival of most species is 80-90%, and the use of circle hooks increases survival (even gut hooking can be survived). Catch rates with circle hooks are similar to that of J hooks.

There is a real need for media and marine extension agents to educate anglers about new technologies and practices. Factors that will help to increase C/R practice are: greater recognition for anglers that participate; increased use of circle hooks; and restoration of recreational fisheries.

Unforeseen or unintended effects of C/R are of concern. In particular, because allocations are based on landings, reduced fishing pressure and reduced landings for recreational fisheries could lead managers to decrease ratio allocations of fish for recreational fishers (especially if only recent data are used). C/R may also have a negative impact on charter and party boat businesses because customers may not want to pay for the service if they are not allowed to take the fish.

In conclusion, researchers, managers and fishers need to better identify and quantify the benefits of C/R.

Reducing Post-Release Mortality: Do Circle Hooks Work?

Mr. George Large, Eagle Claw Fishing Tackle/Wright & McGill Co.

Mr. Large gave an overview of circle hook technology. Circle hooks were originally made 9,000–12,000 years ago by Pacific Islanders. Modern use of the circle hook first began with longline commercial fishermen. It was next used by tuna sport fishers. The hook is designed with the point more perpendicular to the shank than parallel. The fish is generally hooked in the lip. The hook must be rotated to be removed, and therefore the fish cannot throw the hook.

There are several advantages of circle hooks over conventional J hooks. First, there is no need to set the hook (the motto is, "work 'em don't jerk 'em"). Second, circle hooks allow fishers to catch more and kill less. And third, ease of use make circle hooks good for inexperienced and laymen fishers.

In application, various fishing methods work well with circle hooks. Different hook designs that help increase survival are available for the majority of marine species. Also, non-offset hooks (less than 10 degrees) reduce gut hooking and mortality, and the new barbless circle hook design works well for salmon fisheries.

Angler Tagging Programs: Can We Get More Out of Them?

Mr. William Shedd, Executive Vice President, AFTCO Manufacturing Company, Inc.

Tagging programs provide important information about fish migration, but we need to do more to better manage certain recreational stocks, especially deep sea pelagic species. Overall, recreational fishers are committed to tagging because they are committed to maintaining healthy fisheries.

The AFTCO Tag/Flag Tournament is an example of an effort that involves all players in the recreational fisheries community. People are awarded recognition for participating. In 1987, 177 anglers were involved in the Atlantic pelagic fishery tagging program. Today there are 2,700 participants.

Anglers are willing to help and have an interest in the success of tagging programs. Recreational fishers should be partners in tagging endeavors, which will multiply the effectiveness and efficiency of these efforts. There is

frustration within the recreational fishing community because they have not yet been asked to fully participate. Fishers and scientists should be partnered in tagging programs to take advantage of the knowledge and expertise of each.

A model program initiated by NMFS was designed to involve recreational fishers in scientific investigations. The goal of this project was to create a collaboration between NMFS scientists and the recreational fishing community. The scientists held a workshop with Southern California anglers to familiarize anglers with scientific investigations, and the anglers were enthusiastic to help.

The key to expanding tagging programs will rely on several factors. First, fisheries scientists and managers should ask the anglers to be involved. Second, the recreational fishing community should be treated more as a partner, rather than the poor stepchild. And third, managers should realize that recreational fisheries generate more than 50% of related jobs and economic resources, but take less than 3% of fish resources.

Volunteer programs can be highly successful and demonstrate recreational fishers' dedication. An excellent example is the white seabass hatchery program, which logs 20,000 hours per year of effort by volunteers.

In conclusion, "recreational fisheries are an untapped golden egg" in tagging programs.

Stock Enhancement: Will Aquaculture Play a Greater Role?

Mr. Donald Kent, President, Hubbs-SeaWorld Research Institute

Mr. Kent began with an example of a successful stock enhancement program. White seabass is an important recreational and commercial fishery. The white seabass hatchery program was borne out of the recreational fishing community.

The objectives of stock enhancement are to increase the current fishery yield, restore diminished stocks, mitigate damage to stocks, and create new fisheries. However, there are numerous arguments against enhancement that are both practical and philosophical in nature. The practical arguments include: we don't know how to do it economically (at least for marine species); its effect will be to reduce the fitness and destroy the genetic variability of wild stocks; hatchery fish may not adapt to the wild; and it is not cost effective.

Philosophically, opponents argue that the focus should be on better managing fisheries so that stock enhancement is not necessary. Similarly, habitat restoration should be most important, rather than fixing the "symptom" of declining stocks. Another concern is that enhancement programs will divert public support from "real" management and that it is a "techno-fix" solution to a very complex problem.

However, Mr. Kent stressed that enhancement is not intended to replace any other management technique. It is just another tool in the box.

There are many reasons for marine stocking. There is political motivation from the recreational fishing community. Also, most commercially targeted species are fished at or above the maximum sustainable yield. Furthermore, forecasts indicate that global demand for seafood will not be met by harvest fisheries alone. Production needs will grow from 20 million tons/year to 60 million tons in 25 years. Currently, one-third of global fish stocks are fully exploited and another third are overexploited.

The questions that should be asked when considering stock enhancement include: What constituency does the enhancement effort serve? What is the role of aquaculture? How is success defined (economic vs. ecosystem/conservation)?

Hubbs-SeaWorld has partnered with the California Department of Fish and Game, the California State Universities, and recreational angling groups to develop the Ocean Resources Enhancement and Hatchery Program. The program is funded by the Department through the sale of commercial and recreational marine enhancement fishing stamps to marine fishers in Southern California. The program is intended to mitigate the decline over the last 50 years in the white seabass fishery from an estimated two million adults to less than 0.1 million. In this program, the recreational fishing community is invested in the process from the start by collecting broodfish for the hatchery. Volunteer fishers then raise them from four inches to the release size of eight inches. Released fish are tagged with binary coded wire tags. The goal of the program is to test the efficacy of stock enhancement as a management tool by expanding the number of release-size fish to over 300,000 per year. To support this goal, the recreational community has constructed and operates 13 cage systems along the Southern California coast.

Fishing Tournaments: Can We Expect Changes? Why, How, and in What Direction?

Mr. Mike Leech,
President,
International Game Fish Association

Fishing tournaments have been around for a long time and are increasing in popularity. In the old days, whoever killed the most fish (or most pounds of fish) won. Few tournaments offered cash awards; the prizes were generally trophies and prestige.

Prior to the 1950s, there was little talk of conservation and the attitude was that the supply of fish in the sea was endless. But during the 1950s things began to change and some people, like Frank Mather, Elwood Harry and John Rybovich, started talking about the need to conserve our resources and to release some of the catches. Tagging fishes for information on migration patterns and longevity were also suggested.

So tournaments began to change. Big schools of tuna were beginning to thin out—no more tuna piled up on the docks at Cat Cay. Purse seines and longliners were starting to have an impact on the fisheries, and recreational anglers were also contributing to the problem. Tournaments were probably

the leaders in fishery conservation, and many gave financial support to conservation efforts. Minimum sizes were set beginning in the 1970s and the number of fish that could be caught was reduced. Also, points were awarded for fish that were released.

But at the same time, money tournaments were getting more popular. Cash awards were getting bigger, the tournaments were attracting more boats, and anglers' efforts were increasing. During this time, only big boat tournaments that could carry observers were offering cash awards for released fish; small boat tournaments still needed to put the fish on the dock if they offered large cash awards.

The Miami Billfish Tournaments led the change in this thinking, showing that it was possible to have a successful big money tournament with small boats, and still be 100% release. Other tournaments along the Florida coast followed suit, until almost all sailfish and marlin tournaments were partial or 100% release, and some anglers began to refuse to fish in kill tournaments. The impact on the Florida sailfish resource was dramatic. Catch rates per unit effort started to increase. Now many parts of the world use the release format for tournaments.

The International Game Fish Association (IGFA) has an inshore and offshore championship tournament series, in which about 20,000 anglers participate. All are either total release or have high minimum sizes and limit the number of fish that can be weighed in. The tournaments cover 10 U.S. states and 18 other countries (95 qualifying tournaments in 2000).

Mr. Leech emphasized that the look of tournaments has definitely changed. Can we expect more changes in tournaments? We have already seen tremendous changes, and more are in store. Currently, if you want to have a U.S. tournament in the Atlantic involving highly migratory species, you must follow these guidelines: 1) register your tournament with NMFS at least four weeks in advance, even if no fish will be landed; and 2) maintain detailed records of number of anglers, costs and catches, submit radio logs and information on fishing hours, name of each boat, bait used, fighting times, weight and length of billfish if boated, and other information, if selected for reporting to NMFS.

Even hooks are now being looked into in an effort to conserve fishery resources. J hooks can do serious damage to a fish that is released. Circle hooks however, usually lodge in the corner of the jaw and cause much less stress on the fish. They also generate far less release mortality (as little as 0% mortality).

The Fins and Feathers Resort in Guatemala has been a leader in the use of circle hooks. The Presidential Challenge Series in Panama, Costa Rica and Guatemala now requires the use of circle hooks, as does the Rolex/IGFA Championship Tournament. Tournament anglers as well as others must comply with strict size and bag limits and some species now

have total prohibition on landing, such as spearfish and several shark species. A billfish below minimum size may not even be lifted from the water for a quick photo.

What are the positives and negatives of tournament fishing? The positives are: even relatively small tournaments pump a lot of money into the local economy; and tournaments contribute a great deal of money to conservation, medical research and children's programs. They contribute to fishery research through tagging and examining fish at the dock. For some, tournaments add fun and excitement to the sport. They have important social attributes. They are a way to measure the health of a fishery and address questions such as, "is CPUE increasing or decreasing?" And, "is the average size of fish changing?"

The negatives are: some people feel that emphasizing big money payouts, instead of family values, may detract from sportsmanship; there is some impact on the resource by concentrating efforts in a particular area; and there may be some mortality even in a release tournament.

Tournaments probably had a greater impact on the resource in "the good old days" than they do today. Anglers have now learned proper tagging methods and most practice careful release techniques to reduce post-release mortality. In fact, bykill from commercial longliners has a much greater impact on billfish than recreational angling, accounting for 98%, 95%, and 85% of sailfish, white marlin and blue marlin kills, respectively. Mr. Leech suggested that most sport caught billfish have a very high survival rate. But there is a need for research on post-release survival rates from longliners. IGFA would be willing to help pay for such a study.

Experience tells us that lots of fish are needed for a successful tournament. There are no more marlin tournaments in South Florida because the catch rate is too low, demonstrating a direct relationship between catch rate and angler participation in Florida marlin tournaments.

Will tournaments continue to grow in popularity? Probably. There are more people, with more boats, and more money, and more leisure time. What about the ethics of tournaments? Is it okay to kill a fish for big cash prizes? Is that what fishing is all about? Many people think so. An example is the Bisbee Black and Blue Tournament, which gave out over $1 million cash awards last year and has grown to over 200 boats. One complication is that many big money tournament anglers are the same people who also fish "no money" tournaments. So the question becomes, which is better, a release tournament run by a for-profit organization that gives little or nothing to conservation and other charities, or a big money tournament that does kill a small number of fish but gives a lot of money to conservation causes?

There has been an interesting phenomenon in the last four years at Walkers Cay in the Bahamas. The tournament, the Barta Blue Marlin

Classic, emphasizes sportsmanship, conservation, camaraderie, and family values. All billfish are released and maximum 30 lb. tackle is allowed. No money is awarded—only trophies and certificates. Walkers Cay is sold out and many boats have to anchor out. The tournament raises $100,000 for children's programs.

Is this the wave of the future? Hard to tell, but a similar tournament in the Dominican Republic was also sold out, and there are inquiries from interests in North Carolina, Puerto Rico, and Kona, Hawaii.

Mr. Leech concluded that the bottom line is that tournaments are here to stay, and yes, we can continue to expect a lot of changes—most likely for the better.

Artificial Reefs and FADs: Good or Bad? More or Less?

Dr. Bob Shipp, Chair, Department of Marine Sciences, University of South Alabama

Dr. Shipp began by proposing that the standard question of "do artificial reefs attract fish, or do they produce fish?" is not the right question when considering artificial reefs for fish management. Instead, the focus should be on the change in the ecosystem and changes in species assemblages.

He offered the red snapper fishery off the coast of Alabama as an example. The artificial reef area (ARA) comprises 1,200 square miles of ocean off the Alabama coast. In the 1970s, before artificial reefs, there were dozens of commercially unimportant fish in this area. Artificial reefs began being placed during the '80s and '90s (originally of discarded materials such as autos, washing machines and voting machines, but over the last 4 to 5 years, better designed materials have been used). Today in the ARA, juvenile snappers are abundant and have mostly replaced the non-commercially valuable species. This area currently produces one third of the commercial snapper harvest. A key question here is whether it is important that the biomass of this area is now different.

Another important consideration is that snappers from Alabama provide a seed population for fisheries in other areas, particularly the eastern Gulf (Alabama snappers move east during hurricanes, as demonstrated by red snapper tagging programs). Other recorded changes are an increase in triggerfish on the artificial reefs, along with the appearance of jewfish, which prey upon many other species of fish.

Our current technology for capturing fish far exceeds our knowledge of ecosystems and resources. Without this important information, management efforts could be ineffective. Artificial reefs could provide an opportunity to study and obtain a better understanding of reef ecosystems.

Marine Reserves: An Essential Tool for Healthy Ecosystems and Recreational Fisheries?

Dr. Jim Bohnsack, Research Fishery Biologist, National Marine Fisheries Service

Marine reserves are important for "giving back" to the resource. No-take reserves (which account for less than 0.2% of marine protected areas in California) do not allow any extraction of resources, including catch and release. In natural fish populations, size is important in breeding success and fecundity—larger fish have exponentially higher egg production. Recreational fisheries tend to remove large-size fish, a practice that is functionally more similar to mariculture (selective breeding) than the natural environment, when measured in Darwin units. In other words, fishing eliminates the most desirable fish.

The major benefits of no-take reserves to fisheries are: fish get bigger, grow older and produce more fish; fish migrate to nearby fishing grounds; no-take reserves protect the quality of the stock; it is harder to crash a stock (because some are protected); if crashed, the stock is easier to recover; and fisheries could potentially be open longer. There are also other benefits of no-take reserves, including: ecosystem structure and function is maintained within a reserve; opportunity for better science and understanding of the resource; aesthetic fisheries (ecotourism) is the largest growing tourism industry; and a 20% no-take zone results in 50% increase of fishery stocks in an area.

Dr. Bohnsack invoked the Cape Canaveral no-take reserve as an example of the benefits that can be realized. Many fish inside the reserve, such as red drum, black drum, snook and others, occur in significantly higher abundances, are larger in size and older than fish outside the reserve. In fact, this area has some of the largest individuals in the world (record sizes) of many fish species. When comparing Everglades National Park with the Cape Canaveral reserve, the sizes of red drum, black drum, and spotted sea trout are many times larger in the Cape reserve than in Everglades Park. The reserve has also been important in the recovery of snook, which were in decline, but have rebounded since the area was designated as no-take.

In conclusion, there is an urgent need to establish no-take reserves to protect the future of fish stocks and fisheries.

Panel V—Discussion

Mr. Ron Lukens, Gulf States Marine Fisheries Commission, expressed concern that tagging efforts should be partnered with science or management regimes to insure that the data are useful to fishery managers. Anglers need training in the proper techniques and procedures.

Dr. David Dow, NMFS, Northeast Fisheries Science Center, asked how much of the size difference between gamefish in Cape Canaveral vs. Everglades National Park is due to decreased water quality in the Everglades?

Mr. Russell Nelson, State of Florida, pointed out that a confounding factor in records set for red/black drums is closure of the fisheries in 1986

and 1988, respectively. Resurgence of world records could be due to a resurgence of the fish stock after closure. Dr. Bohnsack responded that if this were true, he would expect a lag time in record sizes after reopening of fisheries that is not apparent in the data.

Mr. Marty Golden, NMFS, Pacific Recreational Fisheries Coordinator, mentioned the NMFS billfish tagging poster, in reference to Mr. Shedd's presentation on tagging.

Mr. Roy Morioka, Member, Western Pacific Fishery Management Council, asked whether fecundity theory (of exponential size relationship) also applies to large pelagic species? Dr. Bohnsack replied, yes. Mr. Orioko also commented that free-floating FADs were changing the purse seine industry, making it easier to target fish. Thus, FADs don't necessarily increase fish stocks, and commercial fishing practices may affect recreational fisheries.

(Unidentified participant) Cape Canaveral is known to be the only area where 30-40 lb. red drum can be caught due to the fact that the area is landlocked and individuals probably do not migrate out to other areas. These sizes are not limited to the no-take zone. Dr. Bohnsack responded that this increase in sizes was only observed after the no-take zone was established, but the physical features would have been the same.

Mr. Rich Hamilton, Marlin Club of San Diego, asked if there were any studies on striped marlin with circle hooks and live bait? Dr. Bohnsack said this study still needs to be done. Mr. Hamilton also asked if there were any ideas about why there was a decline in swordfish populations. Mr. Leech responded that an increase in water temperature has been given as a reason. But it could also likely be due to unregulated commercial longline fisheries, and also increases in tournament participation. Mr. Hamilton then wondered whether Miami could reap economic benefits from tournaments if there was a marlin fishery. Mr. Leech thought that the answer was probably yes, and added that 85% of marlin mortality is due to commercial longline bycatch.

Panel VI and Discussion—New Approaches to Management and Allocation

Moderator
Dr. Charles Adams, Marine Economist, Florida Sea Grant Extension Program

Rapporteur
Mr. Jerald Horst, Associate Fisheries Specialist, Louisiana Cooperative Extension Service, Louisiana Sea Grant Program

Marine Recreational Fisheries: Do They Need to Be Managed Differently from Commercial Fisheries? Why? How?

Mr. James Donofrio, Executive Director, Recreational Fishing Alliance

Recreational fisheries do need to be managed differently than commercial fisheries due to a lack of history before the Magnuson-Stevens Act (Act). The Act manages for food without proper recognition for recreational fisheries. The fishery has suffered in allocation, partly because of poor historical data and partly because of weak economic data. The recreational fishery is dependent upon robust stocks with a wide variety of sizes and availability both inshore and offshore. Recreational fishermen use inefficient gear and therefore need larger fish stock sizes than commercial fishermen do in order to have success. Existing fisheries management has a poor performance record. We need an aggressive forage fish management plan. In the past, stocks have been managed as individual species.

The recreational fishery wants to get away from real time quota management because recreational data are absent. Such management is almost impossible and should be avoided. If seasons must be used, managers should keep them simple, announce them well ahead of time and not make in-season changes. Seasons should be made as long as possible so that the recreational industry can plan.

The recreational fishery has far more economic impact with less ecological impact than the commercial fishery. The recreational fishery should be involved in an interactive process. Recreational fisheries need to be managed for quality experiences that may not maximize yield from the fishery. In some cases, quality management is for number of fish, in other cases that means size.

Fisheries Policy: Assigning Priority to Marine Recreational Fisheries in British Columbia

Mr. W. J. (Bill) Otway, Recreational Fisheries Advisor, Fisheries and Oceans, Canada (Retired)

Canada has announced a new British Columbia salmon management policy that will have impacts far into the next century. This policy provides a basis for the recreational fisheries to build on and grow over time. The seven principles of the policy are as follows: 1) Conservation of fish stocks takes precedence over all others; 2) Subsistence fisher and treaty obligations (with Native Americans) take precedence over other allocations; 3) After allocation to subsistence and treaty fishers, salmon are

considered common property for all; 4) Recreational fishers are given priority for coho and chinook salmon stocks over commercial fishers; 5) For pink, sockeye, and chum salmon stocks, commercial fishers are guaranteed at least 95 percent of the joint commercial/recreational allocation. Commercial fishers are allowed to harvest coho and chinook salmon only if a surplus exists for the recreational fishery; 6) Selective fishing gear shall be encouraged; and 7) Provisions exist for allocation between gear types.

The rest of this presentation shall concern the details of principle four. Incidental commercial bycatch of coho and chinook salmon come off of the commercial directed allocation for those species unless there is no surplus for commercial allocation. In that case, it is removed from the recreational allocation. All of this happened because of a very organized system. The recreational fishery has spoken with one unified voice since 1964. In the 1980s, the recreationals pressed government for salmon priority allocations with natives first, recreationals second, and commercials third.

This was done through advisory panels of natives, recreationals, and commercials. Natives had some problems with the plan. Eighty percent of the commercials supported it. All proposals were reviewed by the recreational industry. A key factor was that recreationals made compromises to allow commercials to operate. Allocating these small numbers of salmon overall to recreational fishers made little injury to the commercial fishery, but was vital to the recreational fishery.

The Canadian government also used a voluntary buyback program to reduce the commercial fleet by one-half. Key factors in the success of developing this policy were as follows: 1) A cohesive recreational industry that spoke with one voice; 2) The economic facts of the commercial and recreational fisheries were understood; 3) The recreational industry recognized the validity of the commercial industry; 4) Government recognized the recreational fishery; and 5) Government was willing to reduce the commercial fleet.

Angling "Rights": An Idea Whose Time Has Come?

Dr. Jon Sutinen,
Department of Environmental and Natural Resource Economics, University of Rhode Island

History has revealed several trends in fisheries, mostly the commercial fishery. Demographic and economic changes are occurring; fisheries litigation is increasing; allocation problems are increasing; there is resistance to change; regulations are becoming more complex; and funding is inadequate.

Institutional trends are also occurring. The role of government is diminishing; the use of market mechanisms to solve problems is increasing; there is a spread and strengthening of property rights because government is not the most effective or cheapest way of getting things done; and the market economy is superior to central planning.

Other trends include reduced government and devolution with more co-management and self-governance, and an increase in rights-based regimes, such as fisheries individual transferable quotas (ITQs). User charges are becoming more common. Minimum government involvement means maximum efficiency.

Many reasons exist for the use of "angling rights" in managing recreational fisheries. There is a growing use of rights (ITQs) in commercial fishery management. The recreational fisheries' share is too easily eroded without rights. The recreational right to a reasonable share of a fishery's total allowable catch (TAC) is not set. Currently recreational fishers have weak legal grounds to protect their rights.

One method of strengthening recreational rights would be to create "Angling Management Organizations" (AMOs). These AMOs would have the following dimensions: the AMO would own a right to a share of the TAC or spacial rights; stakeholders (recreational fishers) would own the AMO through shares; the AMO must allow all fishers access; the AMO could purchase fisheries quota from the commercial sector or other AMOs; and AMO shares would be tradable.

Recreational fishery management through AMOs would provide several benefits: it would improve balance among stakeholders; it would provide superior conflict resolution possibilities; it would integrate the recreational fishery into the property rights system; it would promote sustainable utilization; and it would create efficient use of fisheries resources.

Aspects of Applying Alternative Models to Allocation Decisions in Certain Marine Fisheries in Victoria, Australia

Dr. C. Murray MacDonald, Manager, Bay & Inlet Fisheries, Victoria, Australia

This presentation outlines alternative approaches investigated to facilitate allocation of bay and inlet fisheries resources among competing user groups in Victoria, Australia.

Both recreational and commercial use of these species occurred. An estimated 450,000 fishers participate in the recreational fisheries, generating a total economic impact (contribution to GDP) of $560–600 million per year. The commercial fisheries contain 108 licenses and on average produce about 3,000 tonnes of fish per year worth $6–10 million, dockside value. Total economic impact of the commercial bay and inlet fishery is $50–60 million annually.

There are also those interested in non-extractive uses of these fish resources and their aquatic habitats, such as ecotourism, diving, undisturbed fish populations for science and education studies, and maintenance of 'existence' value.

The issue was how to equitably share bay and inlet fish resources. Two allocation approaches were considered.

Allocation Based on the Marginal or Net Economic Value of Competing Uses

This model is based on a willingness of competing user groups to pay for additional access/use of available fish resources. This model assumes that no one starts off with any intrinsic right of access to the fish resources; and it provides maximum net economic benefits, but may not provide maximum social equality.

Allocation Based on Determination of 'Community Interest'

This model is based on determination of community preferences for alternative uses of (in this case) fish resources, and allocation of resource shares accordingly. This model assumes that all members of the community have an intrinsic right of access to a share of the available fish resources, and that all competing uses are equally valuable. Allocation outcomes using this model will provide maximum social equality, but may not provide maximum net economic benefits.

Application of the economic valuation approach to Victorian bay and inlet fisheries revealed that the marginal or net economic values of commercial and recreational uses based on the current (default) catch shares (about 50/50 for all species combined) were similar, and that no significant gain in net economic benefit would be obtained by shifting away from the current allocation.

Application of the 'community interest' approach revealed that an estimated 24%-56% of Victorians wanted access to or benefit from bay and inlet fish resources through commercial catching and sale; 13%-28% wanted access/benefit through recreational fishing; 8%-19% wanted non-extractive conservation/ecotourism uses; and 27%-62% had no interest or didn't know the fish species in question. On the basis of this information, recommended allocations of harvestable bay and inlet fish resources would be 25%-40% for recreational catching and 60%-75% for commercial catching.

The Victorian government chose the allocation outcome provided by the economic valuation model—no change to the existing ratio (50/50) of commercial and recreational catches. However, it is not clear whether this outcome was chosen because of a preference for the economic valuation approach to fish resource allocation or because this outcome did not involve reallocation.

Limited Entry and IFQs: Are They Applicable to Marine Recreational Fisheries?

The Red Snapper Fishery in the Gulf of Mexico

Ms. Bobbi Walker, Member, Department of Commerce's Marine Fisheries Advisory Council

Red snapper management is complicated and regulations have increased dramatically. The recreational fishery is required to be closed down when they reach their quota. This is anti-recreational. No state fishery manager believes in recreational closures. Recreational fishers plan their year around their hobby and need a year-round season. No model exists to manage the recreational fishery with a quota system, because data collection is poor. The new system of data collection from charter operators is more accurate than the previous one.

The charter industry has requested a moratorium on the for-hire sector, although shrimp trawl bycatch of red snapper means that shrimp trawlers should also be under moratorium. Coastal dwellers are rapidly increasing, as is coastal tourism. This means too many people are chasing too few fish. We must cap effort. Controlled access should provide efficiencies and keep the recreational sector within its allocation. Controlled access has only been applied to commercial fisheries in the Gulf. The place to start is with a moratorium.

The proposed system of controlled access for the red snapper charter fleet offers two kinds of permits. A transferable permit is for people who entered the fishery before the control date. Others who were operating without a permit, and therefore illegally, would, with proof of participation, get a non-transferable permit.

One of the most significant features of management in the 1990s is shrimp trawl bycatch. It has no benefit to shrimpers, but can have a dramatic effect on other fisheries or on ecosystems. Shrimp trawl bycatch must be reduced for the red snapper fishery to recover. Without trawl bycatch, the directed red snapper total allowable catch (TAC) could be over 100 million pounds instead of the present nine million pounds. We have requested that the shrimp trawling industry work under a bycatch TAC and be closed when they reach it. Many species besides red snapper are affected. Bycatch reduction device (BRD) tests in Florida showed increased shrimp catch, reduced fuel use, less gear wear and tear, and improved shrimp quality with BRD use. Currently Florida is the only state that requires BRDs in trawls. We hope that the other four states will also require the use of BRDs.

The shrimp industry is overcapitalized. The open access nature of the shrimp fishery is the cause of the bycatch problem. Management should start with a moratorium.

The Charter Halibut Fishery off Alaska

Ms. Jane DiCosimo, Fishery Biologist, North Pacific Fishery Management Council

Four management agencies manage Pacific halibut in Alaska. It is the only recreational fish managed by the North Pacific Fishery Management Council.

Two management areas (2C and 3A) are being considered for charter fishery management by individual fishery quota (IFQ). Area 2C presently has an annual 8.4 million pound commercial allocation. The proposed IFQ allocation would create an 87% commercial and 13% charter split. Ninety-six percent of the charter harvest in this area is made by non-resident anglers. Angling on private boats is not addressed in the proposed charter IFQ program.

Area 3A has a current annual commercial allocation of 18.31 million pounds. The proposed IFQ program would create an 85% commercial and 15% charter split. Two-thirds of the charter harvest is by non-residents.

The creation of IFQs for the commercial halibut fishery instead of 48-hour derbies has resulted in an eight-month season, with the boats now continually working areas nearer to shore rather than spread over the entire area as during the short derby fishery. These are the same areas that charter vessels work in. Subsistence fishers and private anglers have expressed concerns about localized depletion.

In the 1999 Pacific halibut projection, halibut biomass is projected to decline severely in coming years by 21% annually in area 3A and 14% annually in area 2C. The fishery has been fishing on a strong previous year class. Halibut stocks have been at peak abundance, but the1988 year class is declining.

In the mid-1980s, visitor numbers, especially cruise ship folks, began to increase dramatically. Many of these people take charter fishing trips. The vision is that the charter fishery can buy some quota from the commercial side. This may be needed if the halibut TAC declines as expected.

It is a complex system with many considerations. Final action is expected in 2001 with actual implementation in 2002 or 2003.

Panel VI—Discussion

Q: Mr. James Donofrio, Recreational Fishing Alliance: How large is the 1988 year class?
A: Ms. Jane DiCosimo: The estimates are made on a relative measure of year-class strength. No absolute estimates are possible due to wide distribution from Northern California to the Bering Sea.

Q: Mr. Donofrio: What do you know about crucifiers?
A: Ms. DiCosimo: Crucifiers are legal gear. There is reported evidence that crucifiers result in less severe injuries to halibut than shaking fish at the rail.

Mr. Mike Murphy, National Marine Sanctuaries Program: Do not underestimate the importance of social equity. In some instances, it may make more sense to allocate to the recreational sector, but elected officials

are very concerned about allocating resources to commercial fisherman who are perceived as being most negatively impacted by management.

Ms. Maury Osborn: I would like to thank Bobbi Walker for acknowledging National Marine Fisheries Service's work.

Q: Dr. David Dow, NMFS, Northeast Fisheries Science Center: How would the fisheries rights system work for minorities in future years?
A: Dr. Jon Sutinen, University of Rhode Island: A rights system can be crafted for any group.

Q: Mr. Brad Gentner, NMFS: I want to thank the panel for bringing up the rights-based system. How would the quota for the for-hire sector be managed?
A: Ms. Bobbi Walker replied that no such system exists. Mr. Bill Otway explained the Canadian monitoring system. Mr. Don Bodenmiller, Oregon Department of Fish and Game, explained Oregon's method of monitoring. Mr. Otway replied that it might cost a lot to get all the data.

Mr. Robert Bentz, Alaska Department of Fish and Game: We have done in-season projections of harvest, which produce in-season regulations.

Q: Mr. Bob Zales, Chair, National Association of Charter Boat Operators: How was the charter industry involved in developing halibut IFQs?
A: Ms. DiCosimo: The guideline harvest and IFQ programs were developed with charter input via a council-appointed committee of charter representatives. The IFQ proposal was made by a charter representative. A sportfishing representative was nominated to the North Pacific Council and has since been appointed.

Mr. Bodenmiller: Oregon uses exploitation rate management.

Q: Mr. Dan Furlong, Mid-Atlantic Fishery Management Council: If size, seasons and bag limits don't constrain the fishery, what other alternatives besides quotas will constrain harvest?
A: Mr. Otway: There are many things that you can do with sizes, seasons and bag limits, like transfer fish from commercial to recreational.

Ms. Walker: Red snapper is the only fishery under closed season. Recreational fishers need stability to plan their hobby.

Q: Dr. Mark Holliday, NMFS: I am intrigued by Dr. MacDonald's mention of a referendum to determine attitudes. Is that applicable in the U.S.?
A: Dr. C. Murray MacDonald: This approach is not widely used in Australia and is only one way to determine rights of access.

Q: Mr. Rich Hamilton, Marlin Club of San Diego: Are there any impacts from NAFTA or other agreements with Mexico?
A: Ms. Walker said she knew of no impacts from agreements.

Q: Dr. Holliday asked Mr. Donofrio if his group would be agreeable to referendums.

A: Mr. Donofrio: We are trying to design a comprehensive membership survey.

Ms. DiCosimo: It is difficult to do a national referendum on an Alaskan issue. Most comments related to the proposed charter guideline level have come from Mr. Donofrio's group.

Dr. MacDonald: You need a cross-sample of the entire community with no bias.

Mr. Otway: The way the questions are worded and knowledge of the clientele makes a big difference.

Mr. Donofrio: I want to reply to Mr. Furlong's previous question. We have lost a lot of our historical records.

Mr. Zales: Mexican imports of red snapper create a problem for commercials because of the smaller size fish. Also, one charter boat can legally fish in Mexico when the U.S. season is closed.

Q: Dr. MacDonald: How do tradable entitlements take care of future generations?
A: Dr. Sutinen: Future generations have equal access to purchase shares of an AMO.

Q: Mr. Sebastian O'Kelly, U.S. Department of Commerce: The strength of this country is that access is free after license purchase. What happens to the private individual under the rights-based system?
A: Dr. Sutinen: Individuals will have to purchase property rights. Unpriced resources lead to their misuse and abuse.

Mr. O'Kelly: Commercial fishers are in commerce; individuals are just in a recreational resource. You will inject economics as an access barrier.

Dr. Sutinen: AMO management would manage the fish and all parties would have rights of access.

Mr. O'Kelly: The word "acquire" is the key. Those with the most resources and who are the best organized to pressure government decision-makers, will prevail.

Mr. Otway: Based on European salmon, high-value ownership does not equate to good management.

Dr. Sutinen: Atlantic salmon are under weak property rights.

Q: Mr. Gregg Weatherby, UFA Conservation Foundation: What is the status of AMOs?
A: Dr. Sutinen: They are highly politicized. One system is under comment in New Zealand. It is highly complex and many systems are possible.

Panel VII and Discussion—Ethics, Outreach, Education and Information: Output versus Outcome

Wednesday, June 28, 2000

Moderator

Dr. Christopher Dewees, Associate Director for Extension, California Sea Grant College Program

Rapporteur

Ms. Jodi Cassell, Marine Advisor, California Sea Grant College Program

Informing the Public: Roles and Responsibilities of the Angling Press

Capt. Rick Gaffney, Pacific Editor, Saltwater Sportsman

(Capt. Rick Gaffney's presentation was read by Mr. Doug Olander, as Capt. Gaffney was unable to attend.)

Mr. Doug Olander, on behalf of Capt. Gaffney, discussed the "thread" of stewardship which has continued from the early writings on sportfishing by Izaak Walton. He emphasized the important role that journalism can play in increasing political and environmental awareness of anglers, but also noted problems in sportfishing journalism, such as ignoring major issues due to issues with advertisers; and promotion of activities without consideration of the consequences (like increasing catches on declining stocks). Mr. Olander closed his talk by noting some of the "most important stories of our time"—population growth's impact on marine resources, the lagging of marine management approaches behind those seen in terrestrial systems, climate change and biodiversity laws, and the science/policy connection (or lack thereof).

Influencing Angler Ethics: Does Preaching Beget Practice?

Mr. Ryck Lydecker, Associate Editor, BOAT/U.S. Magazine;
Ms. Ellen Peel, Executive Director, The Billfish Foundation

Mr. Ryck Lydecker spoke about how education campaigns could be framed to anglers. Mr. Lydecker specifically discussed programs promoting "ethical evangelism," such as codes of conduct, the "Hunter's Pledge" of Izaak Walton, League of America, and specific boating safety programs in terms of their effectiveness in changing behavior. There is a lack of empirical data, but these types of educational campaigns do seem to work. He cautioned that overly "preachy" campaigns could backfire, except when dealing with safety messages (such as the "Ten Commandments of Firearms Safety") and noted that a side benefit of angler education programs is education of the non-fishing public, which occurs through these campaigns. Mr. Lydecker further emphasized that, in framing expectations and approaches for education campaigns, we must be aware that there will always be a large group of "potential learners," as well as people who will not "behave," and that we should orient education programs toward the former.

To address the challenge of educating potential learners as well as the non-fishing public, BoatU.S. (Boat Owners Association of the United States) in partnership with NMFS, launched "The Ethical Angler" campaign in April 2000. In view of the changing demographics of the U.S.

population, The Ethical Angler is designed to be an effective tool that experienced anglers can use to impart the ethics message to newcomers to fishing, Lydecker concluded.

Ms. Ellen Peel spoke about two successful constituent involvement programs of The Billfish Foundation that have led to education and responsible fishing. In the first program, The Billfish Foundation is working cooperatively with the National Marine Fisheries Service on a tag and release program, which has resulted in billfish anglers "embracing the catch and release ethic." Providing feedback to anglers and specific incentive programs, such as awards, proved to be important in this program. In the second program, The Eagle Claw Cooperative Effort, The Billfish Foundation focused on increasing the use of circle hooks by purchasing hooks and asking anglers to distribute them. Peel emphasized that education through constituent involvement rather than preaching is the way to "beget" responsible fishing practices.

Educating the Public: Sink or Swim!

Ms. Joy Wolf, Director, Education Department, SeaWorld Adventure Parks

Ms. Joy Wolf emphasized that public education is more important than captive propagation in saving a species, "in the end, we will conserve what we know." She noted, however, that education must be both engaging and entertaining, and cited a need for campaigns to consider working collaboratively with professionals from zoos and education centers with skills and experience in education. She also encouraged the development of common messages and coalition work. Finally, Ms. Wolf called for education campaigns to utilize existing channels, such as schools and books for children as targets for information.

Reaching Out to the Angling Community: Does It Make a Difference?

Dr. James Gilford, Chairman, Mid-Atlantic Fishery Management Council;
Dr. Jim Murray, Program Leader, National Sea Grant Extension Program

Dr. James Gilford provided an overview of the various forms of outreach undertaken by fishery management councils. Outreach is built into the council process via public input and notice requirements. The Mid-Atlantic Fishery Management Council (Council) has a full-time staff person who administers the public input requirements of the Magnuson-Stevens Act, and develops other outreach products, such as the Council newsletter, website, news releases, and a display panel for meetings. Dr. Gilford noted that in order to be effective, an outreach program has to be believable by constituents and also consistent in following up with constituents. Information and positions presented to constituents should also be carefully considered. There may be an over-emphasis on catch and release outreach via organizations, which makes it seem like this is a panacea for all that needs to be done about depleted fisheries.

Dr. Jim Murray discussed fishery management as a social process, which requires education and outreach to facilitate adoption of new ideas and approaches and to solicit buy-in from constituents. Dr. Murray described

the model of Sea Grant Extension's work on fisheries and other issues as an example of this type of education and outreach related to management. Sea Grant advisors/agents and specialists are responsible for serving as a liaison between universities, governments, and communities. They provide outreach on outcome-based information and focus on diffusing this information through social networks in communities. They serve as change agents in working with communities and government. The roles/approaches of the Sea Grant "change agents" are as follows: 1) create an awareness of the need to alter behavior; 2) establish an information exchange relationship, 3) empathize with the client perspective; 4) create an intent to change; 5) reinforce the decision to change and evaluate outcomes; and 6) achieve terminal relationship—help client to self-sufficiency—avoid long-term support role. Dr. Murray closed by noting that, although Sea Grant has been highly successful and well regarded in their unique role as "change agents," there are currently 25% fewer specialists and agents than a decade ago due to a flattening of budgets.

Panel VII—Discussion

Q: Dr. Jim Bohnsack, NMFS: Hunting ethics have changed since the 1950s. One of the best examples of the transition to a hunting/conservation ethic is duck hunting, and the duck refuge system. Will anglers adopt similar codes/ethics? Is there a resistance to this?
A: Ms. Ellen Peel: Any new paradigm will meet with resistance, but if you provide good science/rationale and communication (science translated for the layman), eventually you will see some change.
A: Dr. James Gilford: Development of duck refuges required a very concerted effort by the National Wildlife Federation.
A: Dr. Jim Murray: Development of duck refuges was a very bottom up social process lead by Ducks Unlimited. It did not happen quickly.
A: Mr. Ryck Lydecker: We are far behind in the marine environment, there is not even a consensus on what a "marine refuge" is right now. Public education is very important on this issue because public perception is becoming tied to one view of "refuges" as sanctuaries.
A: Mr. Dick Schaefer, NMFS: Refuges are not all sanctuaries, there are different levels of access allowed.

Q: Dr. Jon Sutinen, University of Rhode Island: What is an "effective" extension mechanism? Has there been any research on different extension methodologies in terms of working with a particular audience—one would assume working with fishermen would be different than working with farmers, etc.?
A: Dr. Murray: There are specific project evaluations, but there is room to do a lot more.

A: Dr. Chris Dewees: Sometimes this depends on a particular sub-issue. For instance, safety issues have been communicated most effectively through fishermen's wives associations, etc.
A: Mr. Bob Miles, International Association of Fish and Wildlife Agencies: There are mandatory hunter/trapper education programs and effective aquatic education programs that exist through Wallop-Breaux funds. People should collaborate with existing programs.

Q: Dr. David Dow, NMFS, Northeast Fisheries Science Center: There is often difficulty in getting information out to fishermen who have trouble making "all the meetings" because they are out fishing. Are there any programs to assist with getting information out to these diffuse populations?
A: Dr. Gilford: There are no specific programs—resources are not available.
A: Mr. Dick Stone (NMMA): Agencies need to make a priority of establishing rapport with constituent groups. More funding is needed for outreach and good follow-up as well.

Q: Mr. Mike Murphy, National Marine Manufacturers Association: What will be the outcomes of this meeting and how will they be communicated?
A: Mr. Lydecker: We will be writing an article for BOAT/US.
A: Dr. Murray: California Sea Grant is producing a synthesis of the meeting. The Sea Grant Theme Team on Fisheries will also be following up on issues.

Q: Mr. Larry Simpson, Gulf States Marine Fisheries Commission: On the issue of a National Marine Fisheries Service and Sea Grant partnership, are there things that Sea Grant could already be doing without needing extra funding?
A: Dr. Murray: Better coordination between NMFS and Sea Grant is a current goal of Sea Grant leadership.

Q: Mr. David Pierce, Massachusetts Division of Marine Fisheries: Working with children is key. In working with schools, I have found that misinformation is common. Do many school districts hire any specific individuals to train/teach teachers?
A: Ms. Joy Wolf: Yes, all districts have science coordinators that people can work with. Some have one per school; it depends on the area.

Q: Mr. Marty Golden, NMFS: How can we justify outreach when agency budgets are declining? Does this make it harder to justify from a manager's perspective?
A: Dr. Murray: It is critical to narrow your objectives in this case and have clear, measurable outcomes.

Closing Discussion and Written Recommendations: Where Do We Go from Here?

Discussion Leaders
Mr. Richard Schaefer, Chief, NMFS Office of Intergovernmental and Recreational Fisheries; and
Dr. Emory Anderson, Program Director for Fisheries, National Sea Grant College Program

Rapporteur
Mr. Marty Golden, Pacific Recreational Fisheries Coordinator, NMFS Office of Intergovernmental and Recreational Fisheries

Closing Discussion

Mr. Richard Schaefer, Chief, Office of Intergovernmental and Recreational Fisheries, NMFS

About four years ago, Mr. Rollie Schmitten, who was then the Director of the National Marine Fisheries Service (NMFS), told me he wanted to restructure the agency. One of the things he wanted me to do was to set up a new staff office for recreational fisheries. One of my responsibilities would be to try to deal with the issue of the terrible image that NMFS had in the eyes of the recreational fishing community. He wanted me to conduct liaison, outreach, and education to build bridges that would strengthen our relationships with the marine recreational fishing community.

As I indicated at the outset of this meeting, I am a recreational fisherman. I have been my entire life. Most of the members of my family are, and, hopefully, I can continue to fish right up until it's time for me to leave this earth. So, the first question that came to my mind is, why does NMFS have such a poor image with respect to recreational fishing? I'm an angler, and there are many anglers in our agency. I have a staff that's concerned about recreational fishing. However, in spite of this, recreational fisheries appears to be in a world of its own. I have difficulty understanding this myself. But, I think in order to answer the question about where we go from here, I should take a few minutes and reflect on the past.

I came to NMFS in the early 1970s and, at that time, believe it or not, there was a recreational fisheries office. The office was very small, with two people, John Gottschalk and Ben Schley. The recreational fishing community was relatively small then and the relationship was very good, as it also was with the commercial fishing industry. We had a lot interactions with the commercial fishing industry. We provided all kinds of services and support through various funding programs. So what changed? Well, you know as well as I do what changed. In 1976, NMFS became a regulatory agency. No one, myself included, particularly likes to be regulated. However, we all realize regulations are necessary, just like we would probably all would like to run stop signs when we are in a hurry. But we don't, because we understand why they are there. I think the same is true in the area of regulating fisheries. The problem that has arisen with recreational fisheries

is that there seems to be a perception that recreational fishers are being treated disparately and unfairly by our agency. Perhaps some of the state agencies are also viewed that way, and often perception is reality.

My office receives a considerable amount of literature from the recreational fishing community. We get complimentary copies of magazines and newsletters from organizations like the Recreational Fishing Alliance. Invariably, when you pick up a copy of one of these, you see things like, "National Marine Fisheries Service screws up again"; "National Marine Fisheries Service gets a bad report card"; "All the people who work for the National Marine Fisheries Service beat their spouses"; and just at this meeting I learned that "NMFS is the evil empire, and that I am Darth Vader!" Now that's the bad news; the good news is that when I pick up the commercial fisheries literature, I read the same thing. So obviously, from my perspective, I conclude that we are treating people pretty even-handedly, but nobody likes the way they are being treated.

Somehow, I and my small staff and others are supposed to try to overcome all this disparate treatment that is perceived out there. So, a couple of years ago, as some of my staff members have already mentioned, I said, "Ok, where do we start?" Well, you have to talk to people. You can't go hide in a closet, you have to talk and get the issues out on the table.

Someone made reference to the fact that there is now an annual Maine Fisheries Forum dedicated mostly to the needs and concerns of the commercial fishing industry. This led me to pose the question, "Why don't we hold some sort of a recreational fisheries symposium?" We would try to get all of the major players, the leaders, those who have the attention of the public, together. The gathering would get government, industry, anglers, academicians, and anyone else interested and try to focus on the issues, look at them closely, and then decide where do we go from here?

It was with those thoughts in mind that we put together this symposium. We started work on the symposium over two years ago. And, as I mentioned earlier, the agenda went through many, many iterations and resulted in what we have followed for the last three days. I am encouraged by it. There was a great deal of anxiety on my part, and that of my staff. You always wonder if it's going to go well, and are we going to get something out of it, etc. I certainly did, and I certainly hope others did, and I appreciate the acknowledgment that's been conveyed by many for the effort that's been made. Having said all that, where do we go from here?

There are a number of things that I have heard in the last few days, which I think my staff, and others and I can do something about. Conversely, there are others things that we cannot do. People like Mike Hayden (President, American Sportfishing Association), for example, indicated that if he could, he'd go back and start from scratch in terms of the legislative authority that our agency has as its mandate. Mike wouldn't fiddle with mending the Magnuson-Stevens Act, for example; he would start all over

again with some new institutional mechanisms and processes. This may be a good idea, but you don't need to convince me. You have to go to the Congress, or to your state legislatures, to make it happen. I can't make that kind of change occur. I'm prohibited from lobbying as a government employee, as are all other government employees. If angling constituents are unhappy with existing law, then it's up to you to influence the people who can change that law, and those are your political representatives in Congress and in the states.

Every piece of legislation under which NMFS currently operates has as a finding of the Congress that both recreational and commercial fisheries are historically important to our nation. Everything our agency does is based on this Congressional finding of equality between the two sectors, and we take that as our mandate. In terms of giving preference, we try to treat these issues even-handedly between competing user groups. If recreational fishers want priority consideration, they are going to have to deal with that on a legislative level. I can't change it.

If people are unhappy with the current regulatory regime under which they are governed, there are existing institutions and processes that are available to them to try to make change. The regional fishery management councils, the state marine fisheries commissions, and the individual state fish and game agencies are the places to start. They all conduct hearings, hold meetings, scoping sessions, etc., to provide input to that process. If people don't take advantage of these opportunities, their views are less likely to be incorporated into the decision making process. Anglers who want to see change are going to have to stand up and be counted.

How do we influence fisheries policy? I heard some fairly positive comments that Mike Nussman (Vice President, American Sportfishing Association) and others have made saying that they see some change going on with respect to recreational fisheries policies. One of the purposes of this meeting, for example, was to try to find ways to affect and change policy. For example, some anglers don't want us to implement in-season fishing closures and others don't want recreational fisheries regulated by quotas. People are starting to hear that we are making some changes and that was one of the reasons for putting this symposium together, i.e., to get those issues on the table, and to try to influence agency policy and the agency's leadership.

Let me suggest another idea. We are four months from a presidential election in this country. It will make no difference in my mind whether it's Vice President Gore or Governor Bush, but when one of them walks in the door, he is going to come in with his own ideas and new policies that will govern this nation for the next four years. Those policies will cascade down from the White House and affect all government employees, from cabinet level positions right on down to the bureaucrats. When the election is over and the winner comes forward, he will bring with him transition teams,

people who will look at how our agency works, where we put our dollars and our emphasis, etc. You have an opportunity through the political processes and the transition teams to influence the new policies. The time to start thinking about how you might become involved in this process is now, because the opportunity will be upon us very soon. You can indeed influence agency policy and affect the thinking of the new leadership that will come in. After November, I guarantee you there will be a lot of new faces; it happens all of the time. I've been in this agency over 30 years and, as I said, there will be changes no matter who gets elected.

What about the issue of reorganization that I mentioned? We went through a major reorganization four years ago; how can that be helpful? One of the things that was pointed out very precisely by Mike Nussman, as an example, was when he referred to the new NMFS poster: "Where's the angler? Where's the angler with the rod, reel, and fish? All we see on the poster are marine mammals and commercial fishing." One of the problems that we have in our agency right now is that there is no focus for outreach functions; it's disparate and it's disjunctive. We are all busy people just as you are, and things don't always get communicated among the different offices of our agency. As a result, things can end up going out that haven't been thoroughly screened. I can guarantee you that if I and my staff had seen that poster in advance, there would have been a picture of a recreational fisherman or woman on that poster. To address this issue, Penny Dalton, our Director, is now looking at the possibility of consolidating the outreach focus in our agency into a single office. This process has not gone very far yet, however. She is concerned about addressing this issue in some manner and, hopefully, whatever path we take, we will be able to do a better job of presenting the image of our interaction with the recreational fishing community.

I continue to hear, "we can't do any of this without bucks." Many of the presentations at this symposium included this comment. This is not new. I've heard it since I was first hired years ago. So what do we have to do? We get our funding from the United States Congress, through the appropriations process. If you want us to get more money to spend on things like recreational fisheries data, then you're going to have to influence the politicians to make it happen; we can't lobby for that inside of government. If you want NMFS, Sea Grant, and other NOAA components to get more funding for programs you consider a priority, you will have to go to your congressional representatives, appropriations committees, etc., and make your voices heard.

There is, of course, another source of funding that not many people like to talk about, particularly marine anglers, and that is the concept of user fees or licenses. Folks, all I can tell you is that if you want to make some of the things we have talked about over the last few days happen, you're going to have to reach into your wallets. Mr. Gil Radonski made an

interesting point the other day about anglers who are trying to get a marine recreational fishing license in the state of North Carolina. They found that the main resistance to the proposal was coming from the commercial fisheries lobby. The lobby is afraid of the power the license would give to the recreational fishing community and the dollars that influence that power. I think people who resist the concept of licensing and having to contribute to the sport—and again I'm an angler as well—are misguided. I really believe that.

This conference was specifically set up as a broad-brush survey of most of the major issues. We touched on as many issues as we could in two and one-half days without having had an opportunity to go into any in great depth, but that was intentional. I hope that some of the issues that were discussed and debated here, such as the issue of recreational fisheries data and how we can enhance angler participation in that process and do a better job, can be expanded upon. Perhaps we need to follow this conference up with more issue specific workshops, conferences, symposiums, or forums. I think we need to identify all these key issues, and then somewhere downstream, plan to hold some issue-specific conferences and try to come up with more specific detailed recommendations.

Finally, the thing that I most want to see come out of this symposium is stronger partnerships; and, frankly, I've heard others say the same thing. Great changes are going on as we sit here today, and out of change comes opportunity. We have a great opportunity to establish government, industry, and angler partnerships to make things happen outside of the regulatory regime, where we don't seem to be able to get beyond the invisible brick wall. With effective partnerships, we can influence young people in our society to get interested in angling and to make angling a lifetime activity. Citizen involvement in angling is important to the health of our nation's resources.

One of my ideas to further this process is to concentrate more on our urban environment. Several speakers addressed this in their presentations, and I have talked to many of you who have voiced the same thing. I do not take any pride of authorship in addressing this issue, but I do want to take this opportunity to increase our focus on it. Getting inner city kids, in particular people generally from the lower economic strata and diverse ethnic groups, interested in recreational fishing is crucial to the long-term health of our marine environment and our sport. Therefore, I challenge all of us to start to build partnerships to work on what I would call a "National Coastal Urban Angling Program." We can start with a few coastal cities, working with local, state, and federal governments; anglers and the angling industry; boys' and girls' clubs—the list could fill a book. I think we can make this happen and by getting the right people together, the funding and resources to make it happen will follow.

In closing, I think we have all learned a lot over the last few days and I appreciate your involvement. Additionally, I hope that what we have talked about here is a new beginning of great things to come.

Dr. Emory Anderson, Program Director for Fisheries, National Sea Grant College Program

I thank Mr. Dick Schaefer along with the moderators and rapporteurs for their excellent panel summations. They have covered the bulk of the major issues that have surfaced at this meeting. I will touch briefly on a couple of issues that have been woven through many of the discussions at this symposium.

The things that are really needed to create a better informed constituency and general citizenry are communication, outreach, education, and collaboration, things that the Sea Grant Program is specially structured to do. These tools are, of course, aimed at improving public understanding of the resource that we all love, plus the process and systems that are mandated to regulate and conserve that resource. The challenge is to move forward where work is needed, taking advantage of mechanisms in place to address them, as Mr. Schaefer has mentioned. Since so much of what we do is dictated by the funds we have available, it is critical that we take advantage of every opportunity to collaborate.

To this end, Dr. Jim Murray alluded to congressional interest in providing greater funds both to NMFS and the National Sea Grant Program to improve fishery extension capabilities. I think people in both agencies are very excited with this prospect. There have been informal efforts at doing collaborative work over the years, but this would really be the first time, if funding is made available, to set up a purposely structured program. The expertise and know-how that reside within the Sea Grant Extension Programs, together with the needs that are so obvious on the NMFS side, cry for such a linkage. The ability for us to effectively engage in this sort of team approach however, as Mr. Schaefer mentioned, depends on whether the funds are appropriated. This, again, is your chance to influence the system by talking about it with your congressional representatives and senators.

The implementation of the proposed increase in NMFS and Sea Grant extension capabilities would be most welcome, but we have not been without good collaboration. Our co-convening of this symposium is one example of our interagency cooperation. Additionally, I was assigned to the National Sea Grant Office about a year and half ago as a NMFS employee to begin the process of trying to ensure greater cooperation between these two components of NOAA. Progress has already been made, particularly as related to collaboration on research. We are continuing to work on securing greater collaboration at the regional level, not only involving NMFS and Sea Grant, but to engage the constituents as well. Again, a strong suit of the

newly proposed fisheries extension capability will be to engage constituents such as the recreational sector, the commercial sector, the environmental groups, and others to assist in the resource management planning process.

Speaking from the Sea Grant perspective, I think you will see more collaborative initiatives in the future. This perspective was emphasized by Dr. Ron Baird in his opening remarks Monday morning. Ron indicated that he personally will look very closely at the outcome of this meeting to see where the indicators are for directing emphasis within the fisheries program of Sea Grant. As always, the extent of our efforts will depend on the level of funding made available.

I think that covers most of what I needed to say and in the time remaining we want to open the discussion for questions and comments from the audience. NMFS and Sea Grant welcome any recommendations from the audience. We also welcome any follow up recommendations in writing. Comments sent to Dr. Emory Anderson or Mr. Dick Schaefer will be consolidated in the final report for the symposium.

Audience Comments

Mr. Roy Morioka, Member, Western Pacific Fishery Management Council

As we go forward talking about commercial fishermen, environmentalists, and anglers, I'd like to call for us to also be sensitive to a disenfranchised group called subsistence fishermen. I was reminded recently at a seminar similar to this regarding fishing tournaments where a Pacific Islander said, "don't play with our food," and that concept has stuck in the back of my mind. We need to more effectively include subsistence fishermen in all of our discussions related to managing our fisheries resources.

I have a second item I'd like to share with you today. This symposium focused on how to validate the recreational fisheries data and the quantitative analysis of its economic value. I call on us to also be sensitive to the qualitative analysis, the social value of recreational fishing. I view the social value of angling as a key part of the quality of my life and that is something that I would hate to lose.

Mr. Dick Stone, Fisheries Consultant, National Marine Manufacturers Association

To follow up on something Dick Schaefer said, don't underestimate the importance of little things, like the NMFS poster that lacks the recreational component. I know that when I was working for NMFS, one of the things that used to bite us many times was language used in regulations and documents that NMFS put out that neglected to address recreational fisheries. I think it is extremely important that this kind of problem be brought to the attention of the agency director, Penny Dalton. I think it's important that the NMFS Office of Intergovernmental and Recreational Fisheries look at all agency documents that are going out, to ensure that they address recreational fisheries, regardless of the intended audience. I

suggest this simply to overcome the feeling of prejudice that the recreational community might have when they look at a document that may, for example, address commercial fisheries, but not mention recreational fisheries.

Outreach is also important. Anglers like to talk to agencies about issues, and they like to feel that agencies are listening to what they have to say. I think one of the follow-ups that is needed is that when anglers provide input to a decision, they should be provided feedback as to what the decision was and why it was made the way it was. I don't think the agency has done a very good job of providing anglers with quality feedback. I cannot emphasize enough the importance of outreach communications, and don't overlook little things that people can perceive as being the old Bureau of Commercial Fisheries outlook. For a long time, that image stuck with us but, hopefully, we are getting beyond it now.

Dr. Bill Hogarth

Just two or three weeks ago, I spent the weekend in Key West, Florida, at a commercial fisheries group meeting. I sat here this week and I closed my eyes and thought "I'm back where I was in Key West with all the same issues—the science is not good, the regulations are not good, we don't have input." I think one of the other issues I heard at that meeting that I didn't hear much about here was enforcement. So I guess my question is, "Are we making as much progress when we meet separately as we could if we joined forces more often?" Would it be better to try to have a summit to bring the leaders of both groups together to talk about an issue? If science is a problem, if responsiveness is a problem, or if there are other problems common to both groups, couldn't we be more effective in trying to solve them as a single group, rather than as two different factions?

I think we can solve some of these common problems more effectively as a group. Presently, what often happens is we meet as separate groups and the gap between the groups widens. The commercial fishers feel like the recreational fishers are plotting to get rid of the commercials. The recreational fishers are thinking the commercial fishers are plotting to leave the anglers with as little as possible. This is not the best way to make progress.

I think that we just need to work together better and have more joint meetings to bring the groups together. I did that once with red snapper in the Southeast Region. We had a meeting that included 115 people, a mix of both recreational and commercial fishers. At the end of the meeting, I was told by anglers, "I didn't realize that we had some of the same issues with the red snapper that the commercial guys have," and the commercial fishers were saying, "I didn't realize some of the things about the red snapper recreational fishery that were brought up." The joint meeting led to the development of a red snapper season that hopefully will gain some stability in a few years. I think this example really shows the value of good commu-

nications and a way for the future, because I, for one, hate to keep seeing us going down separate paths.

Regarding another issue, one observation I can share with you is that I think the commercial industry is much better at politics than the recreational industry. You see bills, particularly at the state level, that are often designed specifically by the commercial industry. I think some of the Magnuson Act bills that have been introduced were basically written by the commercial fishing industry.

Mr. Richard Schaefer

Thanks, Bill. I would just respond by saying I concur wholeheartedly. I don't think there is a person in this room that could deny that the one common aspect that recreational and commercial fishers share is the desire to have healthy and robust fisheries resources. Everybody at this meeting has said, "If you don't have fish, you don't have fishing." It's quite simple. There is commonality, and if we can get beyond some of the allocation issues in some way, I think there is more to the common good than not.

Mr. Richard Shiroma, Chairman, Recreational Data Task Force, Western Pacific Fishery Management Council

I appreciate Dick Schaefer's comments relative to the political process. I think the concept of involvement in the political process is somewhat novel to anglers. It is clear that we need to be more involved in the process if we are to achieve our goals.

I would like to make two observations. I am relatively new to this process, although I have been an angler for over 35 years. I am a neophyte to the fishery management council process with only about a year's experience. However, since I started attending the Council meetings, I have learned more about seabirds, turtles, and seals than I have about recreational fisheries. It seems that these three topics have dominated our interest in the Pacific. I would like to propose that there be an increased focus on recreational fisheries, both at the NMFS level, as well as the council level in the future.

Second, relative to the image of NMFS, I would like to suggest that you consider developing a grass roots program. This kind of program would involve NMFS staff getting out to the boat ramps and launches and actually talking to the anglers, not to collect data but just to develop a rapport with them. After 35 years of fishing, I don't think I've ever seen any NMFS staff at the piers or ramps on a social basis. I think if we get to know the people that work at NMFS and develop some common understandings, we would get to trust them because we all live within the same communities.

Mr. Richard Schaefer

Thank you, Richard. I appreciate your comments. Regarding the fishery management council (FMC) process, it is complex, but there is literature available from various sources on how the council process works. Also, Dr. James Gilford, Chairman of the Mid-Atlantic Fishery Management Council, is working on outreach in terms of getting the information out on how the system works. My office will be happy to help you locate this kind of information as well.

Richard, I also agree with you about the importance of NMFS staff developing personal relationships with anglers. With respect to my staff: Bill Price, my National Coordinator for Recreational Fisheries; Ginny Fay, the Atlantic Coordinator; Michael Bailey, the Gulf of Mexico Coordinator; and Marty Golden, the Pacific Coordinator, make every effort to go down to the docks, go to club meetings, and meet with anglers whenever they can. We are limited, however, in how much we can do given our staff size and budget. I agree with everything you said about the importance of meeting with the public. Dick Stone mentioned this earlier when he said, "You have to meet with fishermen. That's what builds trust and understanding and that is what makes government work." The organizational structure cannot work in a vacuum; it is the personal relationships that make things happen.

Dr. James Gilford, Chairman, Mid-Atlantic Fishery Management Council

If anglers are not more involved in the marine resource management process, it's because they are not taking advantage of the tremendous opportunities to do it. There are several publications that lay out the fisheries management council process including:

"Fish or Cut Bait, How to Participate in the Fisheries Management System," revised February 1999, by Bonnie McCay and Carolyn F. Creed. Order from: New Jersey Marine Sciences Consortium, Bldg. 22, Fort Handcock, NJ 07732; phone (732) 872-1300 ext. 18.

"Fisheries Management for Fishermen, A Manual for Helping Fishermen Understand the Federal Management Process," published 1994 (MASGP-94-012), by Richard Wallace, William Hosking and Stephen T. Szedlmayer. Order from: Auburn University Marine Extension & Research Center, 4170 Commanders Drive, Mobile, AL 33615.

I do think recreational anglers should become involved in all aspects of the fishery management process. They do get involved in the council process, but generally only when confronted with an issue such as creel limits, size limits, and seasons, which have the potential to disadvantage them. Many of them know the management process. They know how to become involved but, generally, they do not participate early on in the management of recreational fisheries. I think this is a shortcoming that our outreach effort must address.

Mr. Rollie Barnaby, University of New Hampshire Sea Grant Program

The comment that the commercial fishermen are better "politically" than recreational fishermen may be true, but the non-governmental organizations (NGOs) are much better than both of them. The commercial and recreational fisheries communities also have a lot in common with the NGOs. The best way to effect a change is by using the legislative process, and the best way to do this is to show up in Washington, D.C., with an angler, a commercial fisherman, and an NGO together. You can get anything you want if you use this strategy. Congress is tired of hearing from the recreational people here, the commercial people there, and the NGOs at the back door. You need to get together and, if you do, the results will be unbelievable.

Mr. Richard Schaefer

In closing, I know the people that made this symposium a reality have already been thanked, but I want to thank them personally. I couldn't have a better staff. My staff is small but they work extremely hard, and I thank them profusely for the work that they did to make this conference happen. I want to thank Dr. Emory Anderson, Sea Grant Program Director for Fisheries, and my colleague, Dr. Jim Murray, Program Leader, National Sea Grant Extension Program, who were our partners in putting this symposium together.

I also want to thank the moderators and rapporteurs in particular for volunteering their time. Those are often thankless jobs, but somebody has to do them. I appreciated your enthusiasm in carrying out your assignments most effectively.

Thank you to the sponsors, the people who contributed money to make this happen. We didn't have enough federal dollars to make this symposium happen, and it was only through their contributions and sponsorships that this symposium occurred.

The panelists all volunteered their time to come here and make their presentations, and I thought they were just terrific. Finally, I want to thank you, the audience, because this was designed to be a participatory, interactive symposium and you did your jobs very well. Without the audience questions and comments, the symposium could have become a dull affair. The audience participation kept the symposium vibrant, and I thank you very much for that.

Dr. Emory Anderson

I'd be very remiss if I didn't draw attention to the fact that the majority of the moderators and rapporteurs were Sea Grant folks; you all did a great job. Also, even though Sea Grant was a co-convener of the symposium, certainly in terms of funding and to some extent, time involvement by Jim Murray and myself, I think credit is really due to Dick Schaefer's group. I pay special tribute to Bill Price and Dallas Miner for the smoothly run

process. I have rarely been to a conference where something hasn't gone wrong; if things happened here, I didn't notice because it was all handled very nicely behind the scenes. So, speaking for the National Sea Grant Office, we really appreciated it.

Written Recommendations

At the close of the symposium, Discussion Leaders, Mr. Richard Schaefer and Dr. Emory Anderson, invited the audience to provide closing comments. Additionally, it was noted that written recommendations after the symposium would also be accepted. The following written recommendations were received.

Mr. Tom Raftican, President, United Anglers of Southern California

Regarding angler involvement in the fisheries management council process and in fishery management decisions at both the state and federal level, the meeting process is a good way to get angler input. However, please keep in mind that most anglers, unlike commercial fishers, have another job. More often than not, anglers are unable to participate in meetings held on weekdays during normal working hours. To increase the commitment to involve anglers in the management process, more meetings need to be scheduled in the evening or on weekends. Additionally, meeting notices should be expanded beyond the perfunctory Federal Register notices and news releases to reach out to anglers and angling organizations directly. Expanded use of video conferencing would also be very beneficial to this process.

I am also concerned about the composition of federal regional fisheries management councils. The angling community plays a large but underrepresented role in the council process. Greater representation on fisheries management councils by the angling community may require direct intervention by the Secretary of Commerce if appropriate nominations are not being made.

Mr. Marty Golden, Pacific Recreational Fisheries Coordinator, NMFS Office of Intergovernmental and Recreational Fisheries

I know there has been a lot of discussion about the effectiveness of outreach and education and, in some situations, it is being done very effectively. However, as we—the resource agencies—continue to struggle to develop public acceptance of our marine resource management programs and garner appropriate funding and staff to carry out our mission, I think we still have a long way to go with outreach and education. A few "glitzy" brochures cannot do the job alone. More people need to pound the pavement and the docks. I would like to see a time come where all technical staff and managers have, as part of their performance plan, a requirement to get out of their offices and interact with the public. This requirement must not be nominal, but must be supported at all levels of management, with adequate funding

as well as recognition. We need to remember that the voters are the real decision makers, and the youth of today are the voters of tomorrow.

Dr. John Hunter, Fisheries Scientist, NMFS Southwest Fisheries Science Center

I would like to point out that, throughout the symposium, many speakers used various statistics to try to indicate the importance of recreational fishing to the nation and local economies, and that NMFS spends relatively little on recreational fishing relative to its importance. In most cases, these statistical comparisons are inappropriate and misleading. I think there is a need for a formal examination of the contributions of recreational fishing for each region in the U.S. The examination should assess recreational fisheries' importance relative to commercial fishing in the local economies, as well as to the nation in general. We need a formal report on this matter by an authoritative panel such as the National Research Council (NRC). Creating such a document would help us see things in a more objective light. I, therefore, recommend that NMFS request the NRC to convene a panel of economists and others, to evaluate this issue and produce a report on the subject.

Mr. Craig Heberer, NMFS Recreational Fisheries Coordinator, Southwest Region

There are several issues that I believe need more focus and attention as noted below.

Establish cooperative efforts with the government of Mexico on shared recreational fisheries issues such as population dynamics, research on transboundary gamefish stocks, and long-term planning for their sustainable management. This cooperative effort was proposed some time ago, but is still unfunded.

There is a critical need for fisheries independent surveys on recreational gamefish stocks in California, both short-term and long-term.

NMFS outreach and education programs need to better address Pacific Coast issues and needs. Current efforts are for the most part focused on East Coast and Gulf issues.

In addition to forging partnerships with Sea Grant, possibilities exist for NMFS outreach and education collaboration with other up and running NOAA programs, some of which have funded mandates for such activities. These include the National Marine Sanctuaries Program, the Office of Coastal Resource Management, and the National Estuarine Research Reserve System.

NMFS should also develop educational programs independently and without any "agendas" other than to get our message out, for example, conservation education, biodiversity and endangered species.

Poster Session Abstracts

San Francisco Bay Seafood Consumption Study

Elevated levels of organochlorines and mercury in fish commonly caught from San Francisco Bay have raised public concern regarding health risks. Although sportfish health advisories recommending consumption limits have been in place for many years, little is known about the population of anglers who continues to eat Bay fish. In response, the California Department of Health Services conducted a study to characterize fish consumption patterns and demographic characteristics of San Francisco Bay anglers. In addition, we sought to identify highly exposed subpopulations and gather information for developing educational programs. Over a one-year period, we conducted over 1,300 interviews of Bay anglers fishing from piers, shorelines, and boats. We also held a series of focus groups to explore ways to improve outreach and education to anglers about fish contamination problems. Our findings show that overall fish consumption rates of San Francisco Bay anglers are lower than those reported in other studies, although some ethnic groups are disproportionately exposed to contaminants due to the amount of fish they eat, the species they prefer, and the parts of the fish they consume. To be successful, education and outreach programs must be crafted to reflect an ethnically diverse population whose fish consumption patterns vary widely.

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Broad Scale Recreational Fisheries Assessment: Detailed Catch, Effort, and Economic Information from an Innovative Off-Site Methodology

Broad scale assessment of recreational fishing presents special challenges that invariably necessitate reliance on off-site survey techniques. One such approach involves the use of angler diaries. In conventional diary surveys, reporting responsibility rests with the diarist. Typically, response rates are low and data quality can suffer in terms of completeness, generality, and consistency.

Recognizing these limitations, a combined telephone/diary survey approach was developed for a general population survey of the Northern Territory (Australia). The methodology has been subsequently refined and applied to statewide assessments of licensed fisheries in other states of Australia. In summary, the methodology provides detailed catch, effort, and economic information using brief, but frequent telephone contact throughout the diary phase.

The success of the methodology is demonstrated in diary response rates that have consistently exceeded 97% full participation. Limited on-site surveys have also provided independent validation of catch rates and reveal no evidence of prestige bias.

An important contributor to the success of the methodology has been the primary design philosophy to minimize respondent burden and recall bias. Yet, simplicity for the respondent translates to substantial responsibilities on the part of the interviewer, where in turn, careful staff recruitment, training and management are vital. Additionally, a rigorous approach to other design aspects has resulted in a range of quality control and validation measures to address various response biases and other sources of non-sample error.

This methodology has now been implemented for the 2000/2001 National Recreational Fishing Survey (Australia), in which detailed fishing and economic activity for some 18,000 anglers is being monitored over twelve months.

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Pacific Federal Angler Affiliation for Billfish

The concept of the Pacific Federal Angler Affiliation for Billfish arose from a need to know the current condition of Pacific billfish stocks. A workshop held in 1999 at the Balboa Angling Club of Southern California was convened to develop a plan to expand and enhance research collaboration between California billfish anglers, National Marine Fisheries Service, Southwest Fisheries Science Center, the California Department of Fish and Game, and the Government of Mexico (Instituto Nacional de la Pesca).

Workshop participants reviewed the history of collaborative work, status of stocks, characteristics of the fishery, and information needs for better management of Pacific billfish. Little new information has been collected since the last assessment of Pacific billfish in 1988. Recognizing the critical need for new information and that a new management plan for highly migratory species (including billfish) is being developed, it was agreed that a cooperative effort to enhance the understanding of billfish stocks was necessary.

The participants developed a draft plan that outlined collaborative projects to improve information needed for billfish management. These included the means to acquire specific life history data, trends in abundance, movement patterns, and stock boundaries. Implementation of several elements of the draft plan has already shown great promise while the more costly elements await additional resources.

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A New Method for Estimating Charter Boat Fishing Effort

From 1997 through 1999, state and federal agencies cooperated to implement a pilot study to evaluate an alternative method for estimating charter boat angler fishing effort in the Gulf of Mexico. Cooperating agencies included the Gulf States Marine Fisheries Commission, the marine fishery agencies of Florida, Alabama, Mississippi, and Louisiana and the National Marine Fisheries Service, which funded the pilot study. The pilot study sought to improve estimates of for-hire fishing effort by collecting effort information via weekly telephone interviews of a 10% random sample from a directory of charter boat owners/operators. Respondents reported the number of charter boat trips, numbers of anglers who fished, and primary areas fished. The existing methodology utilizes a random-digit-dialing (RDD) telephone survey of coastal households, which requires a large correction factor due to a significant percentage of charter anglers not residing in coastal counties. We compared the two methodologies and found that charter directory estimates were considerably more precise than RDD estimates with more than a 50% reduction in standard error. Total annual effort estimates did not differ significantly; however, the new methodology produced geographic and temporal distributions of charter fishing effort that were considered much more credible by the Gulf for-hire industry. The new methodology indicates fewer trips in the Exclusive Economic Zone, more trips in inland areas, and no significant difference in the number of charter trips in State Territorial Seas. The primary implications of the new methodology include (1) more accurate fishing area data, (2) relatively low respondent burden, (3) increased cooperation and participation by the for-hire industry, and (4) more precise data, making it easier to accurately identify changing trends in the for-hire fishery. Dependent on funding, we hope to implement the new methodology nationwide by 2001–2002.

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National Marine Fisheries Service's Recreational Fisheries Economics Database

Since 1979, the United States has been collecting data on marine recreational angling with the Marine Recreational Fisheries Statistical Survey (MRFSS). To enable the estimation of travel costs models of recreational demand, the base MRFSS survey has been amended to include necessary data elements. Additionally, data is collected that will enable the estimation of economic impact models. To profile anglers and their behavior, basic demographic and socioeconomic information is collected with both the valuation and expenditure surveys. This poster will describe the economic surveying strategy, process, and resulting data sets in the United States for marine recreational angling. The discussion will focus on the key data elements we have identified for both valuation and economic impact modeling, and will display some descriptive statistics from these surveys. Finally, this data collection effort is continuously expanding, providing a growing database for use by fisheries management professionals, researchers, and academia.

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Marine Outreach and Education in Florida

Located within the Florida Fish and Wildlife Conservation Commission's Division of Marine Fisheries is the Outreach and Education (O&E) Section. Since the fall of 1996, this program has conducted a variety of activities designed to increase the public's participation in the management and preservation of Florida's marine resources. An overview of each program is presented.

- *Kids' Fishing Clinics*—15,039 children have participated in 41 clinics that stress habitat conservation and angling ethics while providing an introduction to the basics of fishing.
- *Ladies, Let's Go Fishing*—924 women have participated in 10 events that focus on marine resource conservation, habitat preservation, and the skills needed to participate in several types of marine angling.
- *Marine Resource Network*—Provides the link between the recreational angling community, research, and fisheries managers. Details on research and projects funded with saltwater license revenue are conveyed to the angling community. This network of some 2,000 individuals establishes a system of volunteers to provide support for outreach and education events conducted by O&E.
- *Aquatic Resource Educational Field Experiences*—3,654 school age children have participated in 112 activities that teach them about marine resource conservation through hands-on field experiences.
- *Florida Saltwater Angler and Boater Outreach Grant*—This project's purpose is to inform recreational saltwater anglers and boaters of the details and benefits of the Sport Fish Restoration program and its impacts on marine resources in the state of Florida.
- *Florida Foundation for Responsible Angling*—A nonprofit foundation developed to support the above programs.

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Examples of Recent Advances in Mapping Seafloor Fish Habitats

Racal Pelagos, Inc. (RPI) conducted a seafloor survey to support an extensive evaluation of a region along the central California coast for analysis of hard-bottom communities and fisheries habitat characterization. The parameters of the study were defined by Dr. Gary Green of Moss Landing Marine Laboratory with the goal of characterizing multiple habitat zones within the area.

The survey data provided the scientists with a means to designate subtle zones such as:

- High-relief hard bottom;
- 0.5–1.0 m relief hard bottom with thin layers of sediment cover; and
- Partially buried, no-relief hard bottom and areas of semi-consolidated sediments, gravel beds, and rock debris.

The study was designed around an extensive side-scan sonar mapping program and high-resolution multibeam survey, including:

- Survey parameters: 7 km–14 km, with 0.2 m resolution, WD: 2–160 m;
- Combination of 500- and 100-kHz side-scan sonar systems, digital recording, and DELPH-Map based mosaics;
- RESON-8101 system, WinFrog multibeam software, HDMS, CARIS-HIPS;
- Four vessels, ranging in size from 8 m to 55 m; and
- Target verification with ROV, seabed sampling and diving.

Detailed high-resolution side-scan sonar mosaics are necessary to visualize the seafloor for assessment of habitat potential. The 100-kHz ORE image was processed using TRITON ISIS software and mosaicking was done using DELPH-MAP software. The image shows both high-relief (good fisheries habitats) and detailed rock texture for geological analyses. Strong sonar backscatter may result from steep slopes or coarse-grained (e.g., cobbles and pebbles) sediment. Detailed bathymetric contour maps and multibeam shaded relief images resolved a key feature as a steep rock face. Geological evaluation showed that this face is a fault scarp and an excellent interface that commonly attracts rockfish.

Digital multibeam bathymetric data collected to provide 100% seafloor coverage and processed with CARIS-HIPS software to apply sun illumination results in shaded relief images, which were then compared with side-scan sonar data to produce optimal interpretation and seafloor characterization.

A bathymetry contour map with 1 m isobaths generated from the high-frequency multibeam echosounder was used to quantify relief.

Advanced technologies and combined geophysical and geological methodologies provide an integrated systems approach to mapping seafloor features that will aid in the understanding of fisheries habitats. This approach provides an efficient and economical way to image the shallow seafloor and produces data that can be used to address multiple problems in fisheries habitat management.

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Game Fishing in the Southwestern Pacific: A Developing Industry

Overview

The Oceanic Fisheries Programme (OFP) of the Secretariat of the Pacific Community (SPC) has as its main goal "to provide member countries with the scientific information and advice necessary to rationally manage fisheries exploiting the region's resources of tuna, billfish, and related species."

In addition to commercial fisheries, the OFP, funded by AusAID, is also focussing on billfish and game fishing in the region. This study is to assemble information on potential billfish availability at the country level as well as to initiate billfish data collection programmes for commercial and Pacific Island-based sports fisheries.

One of the major problems is the lack of historic and gamefish catch and effort data.

Results

The SPC provides advice to 22 Pacific Island countries and territories spread over the largest ocean in the world. As such, one of the main obstacles to implementing a game fish data-gathering project is distance and communication.

Results to date indicate that game fishing accounts for around 5% of the marlin caught in the Pacific. Commercial longliners catch around 27,000 tonnes pa while the game fisheries catch around 1,300 tonnes pa (including Hawaii and east coast Australia).

Tournaments and charter vessels throughout the Pacific are now being targeted for the collection of catch and effort data.

Conclusions

Game fishing is a developing industry in the Pacific. There is a lack of current and historical data. There is a need to further assist in the development and monitoring of this industry throughout the Pacific. This can only be accomplished through cooperation among researchers, managers, and, of course, most important, the industry. There is still a long way to go.

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Instantaneous Counts: Can They Be Made to Be Better?

Variance estimates obtained from instantaneous counts are reduced by either increasing the number of counts made within each primary sampling unit (PSU) or increasing the number of PSUs within each stratum. In part, either option reduces the within-day variance associated with the time that the counts are made.

This study uses a function that describes the proportion of boats at a location at any given time, and an estimate of the trip duration, to expand instantaneous counts to the effort estimate for the PSU. This function removes the within-day variability associated with time of day the counts are made, producing the same PSU effort estimate irrespective of the time the count was made.

Effort estimates obtained during a bus route survey were compared to estimates obtained using an effort function and the number of boats observed at the ramps at the start of each waiting period. Estimates from the effort function were more similar to the actual estimate in approximately two-thirds of the cases. These preliminary results warrant further investigation into the development of appropriate functions to describe the patterns of boat usage for various PSUs (weekday versus weekend) and conditions that influence boating activities (good versus bad fishing conditions).

If suitable generalized functions describing fishing effort can be produced, they will provide an additional means of expanding effort information recorded during surveys that utilize instantaneous counts. Such functions may also increase the efficiency of survey staff by allowing counts to be made during periods when returning boating parties are expected, increasing the number of interviews per staff day.

Project is funded by the Cooperate Research Centre for the Ecological Sustainable Development of the Great Barrier Reef World Heritage Area.

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A Study of the Effects of the West Hawaii Regional Fishery Management Area on the Aquarium Fishery

This study was focused on the aquarium collectors in the Western Region of Hawaii in an attempt to document their sources of work satisfaction and the concerns they had related to the implementation of the West Hawaii Regional Fishery Management Area. Most previous studies focused on the effects on the coral reef habitat when marine reserves are implemented or expanded. Closing areas to fishing can cause long-term cultural, social, and economic effects on the persons who make a living from this activity.

The purpose of this research was to study three aspects of fish collection affected by the marine reserve expansion: (1) species caught including type, size, number, and mortality rates during collections; (2) fishing behavior and fisherman satisfaction including a study of distance traveled, time spent collecting, date of collection, methods of collection, cost and profits of the collection activity, and general satisfaction with the collection effort; and (3) effects of habitat including the location of the collecting activity, presence of other collectors or recreational vehicles and divers, and weather and sea conditions.

A Collector Satisfaction and Concerns Survey was sent to 19 collectors from West Hawaii. This survey allowed the researcher to summarize the issues relating to the implementation of the fish replenishment areas and the "culture" of the west Hawaii aquarium collector industry. Although a total of 103 fish species are collected in West Hawaii, this group focuses its collection efforts on 11 species. Two monitoring techniques, often used in observing the fishing industry, were designed in this study. The Modified Roving Creel Survey requires the researcher to come out with individual collectors to get quantitative data on the catch and to learn about problems or changes in procedures required by the new law. This method is to be utilized in the next phase of the study. The Modified Angler's Diary was a daily logbook that was sent out to six individual collectors who were willing to participate in this aspect of the study. The initial diary served as a pilot survey, allowing the collectors to give comments and suggestions on the format of the Angler's Diary. Implications for effective management of marine reserve areas that also support the aquarium collection industry are also discussed.

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Mr. Richard Schaefer
Chief, Office of Intergovernmental and Recreational Fisheries, National Marine Fisheries Service, NOAA

Dr. Ronald Baird
Director, National Sea Grant College Program, NOAA

These two individuals recognized the value of bringing together representatives of the myriad of interests which comprise the marine recreational fishing community; to explore issues of mutual interest; and to strengthen existing, or build new, partnerships. They committed the human and fiscal resources of their offices required to make *RecFish 2000* a reality.

And,

Mr. William Price
National Coordinator for Recreational Fisheries, National Marine Fisheries Service

Mr. Price served as the general manager of *RecFish 2000.*

And,

Ms. Virginia Fay
Atlantic and Caribbean Recreational Fisheries Coordinator, NMFS

Mr. Marty Golden
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Administrative Assistant, Gulf States Marine Fisheries Commission

Mr. Dallas Miner
Consultant to the Office of Intergovernmental and Recreational Fisheries, NMFS

These individuals provided the logistical and management support necessary for *RecFish 2000* to meet its desired goals.

In addition,

Mr. James Falk
Program Leader, University of Delaware Sea Grant Extension Program

Mr. Michael Nussman
Vice President, American Sportfishing Association

Dr. Mark Holliday
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And lastly, special acknowledgment is due to all of the many panel members who contributed their time and expertise to make *RecFish 2000* a rewarding event.